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State of California
The Resources Agency
Department of Fish and Game

CALIFORNIA SHOREBIRD SURVEY
1969 - 1970 1/

by

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SUMMARY AND RECOMMENDATIONS

A statewide shorebird reporting program was initiated in July, 1969 by the California Department of Fish and Game. Objectives of the California Shorebird Survey are to determine seasonal shorebird occurrence and population indices at important wintering areas in California. Censusing efforts between July, 1969 and June, 1970 resulted in 463 censuses conducted at 34 census sites by 76 volunteer observers. Thirty-four shorebird species were recorded.

From experience gained during the first year of the shorebird survey, the following recommendations are made:

1. Census sites that are difficult to census or that do not provide adequate information be discontinued.

2. Additional census sites be established at inland locations and along the coastline in rocky and sandy beach habitats.

3. Electronic data processing be used to assimilate and synthesize data.

4. Observers conduct censuses at least twice each month throughout the year at each census site. An additional census be made to compensate for each census that the observer feels was unrepresentative because of disturbance by people, adverse weather, or other unusual condition at the site.

5. Censusers make a greater attempt to standardize their reporting procedure in order to minimize the number of variables that affect the number of shorebirds present at a site. This is especially important at coastal sites, where censuses should be made at nearly the same tide levels each time. This will involve scheduling censuses from tide tables.

6. Censusers, who find it difficult to regularly participate at the best censusing times, seek assistance from competent, alternate observers.

INTRODUCTION

Large numbers of shorebirds migrate through or winter in California each year, but little information is known regarding the current status of these birds in the State. Destruction of inland marshlands and coastal wetlands by economic developments has resulted in an alarming decrease in suitable shorebird habitat. Increasing concern for migrating and resident shorebirds in California has prompted a major shorebird research effort directed by the California Department of Fish and Game. This program is supported by Federal Aid in Wildlife Restoration and by the Accelerated Research on Migratory Game Birds.

The California Shorebird Survey is designed to provide current information on the status of shorebirds in the State. The survey is a statewide reporting system wherein competent observers routinely count shorebirds at selected census sites. Such counts will be used to determine seasonal shorebird occurrence and population indices. This information is necessary for the management and protection of this important international resource.

Concurrent with this survey is an extensive program to trap, band, and color mark shorebirds at selected areas in the State. The survey also provides a means of reporting sightings of banded and color marked shorebirds.

METHODS

From Department of Fish and Game wetland inventories, a list was compiled of wetlands in the State where large numbers of shorebirds are known to occur. In these areas, census sites were located where shorebirds could be censused by selected observers. Help of local, competent bird watchers was then enlisted to contribute to the study. Without cooperation of these volunteer observers such a survey would not have been possible.

Observers were provided with instructions and a supply of reporting forms. At each site counts were made at the convenience of the observers. Ideally these were made three or four times a month. The time of day and tidal sequence when best counts could be made was left to the discretion of the observers.

Counts were recorded on a field data sheet that listed shorebirds most commonly seen in California. Space was provided to record the less common shorebird species. Other water-associated birds, such as herons, American bittern, and California brown pelican, were also included on the reporting form. Counts of each species were recorded in columns designating the habitat where the birds were observed.

Space was provided to record the time the census was started and finished, wind and sky conditions, and tide sequence. It was suggested that observers not spend long hours counting birds but provide a reasonably accurate estimate of the number of each species observed. Censuses were not to be conducted when winds were greater than 24 mph or under rainy conditions.

RESULTS

Table 2 lists the 34 census sites in California at which shorebird counts were made in 1969-70. Site locations are shown in Plate 1. From July, 1969 to June, 1970, 463 censuses were conducted by 76 volunteer observers. The thirty-four species of shorebirds reported are listed in Table 1.

Appended is a discussion of each census site giving location, directions for censusing, names of observers, and an accounting of the sightings. Appendix A includes sites that were censused regularly. These are provided with graphs showing maximum monthly counts of selected shorebird species and total shorebirds observed. Appendix B includes discussions of sites with less complete census coverage during the year.

Because of the shortcomings of the 1969-70 California Shorebird Survey, no attempt was made to correlate seasonal movements and populations at each census site to arrive at a general statewide analysis. Following is a discussion of censusing problems and a summary of censuses at each site.

To standardize the reporting procedure as much as possible, observers were provided with instructions that placed limits on the area and times of coverage. Observers were requested to conduct the censuses in the same manner each time and not to change census procedures. Several factors, however, are not controllable. These include (1) how well the observer follows instructions; (2) ability of the observers to recognize species; and (3) unexpected changes in conditions at the site, such as weather variations and human disturbances.

Observers were requested to conduct censuses three or four times a month, but this frequency was impractical in the majority of cases. Observers generally censused one to three times a month. The enthusiasm of many observers wained as the program progressed. As a result, data from many sites are limited by gaps in reporting of several weeks, or even months, or premature termination of reporting.

Because of morphological similarity of many shorebird species, recognition problems were anticipated. The categories "sandpiper species" and "dowitcher species" were included on the reporting form for situations in which observers were unable to distinguish between small sandpipers, such as dunlins, least sandpipers, and western sandpipers, and between short-billed dowitchers and long-billed dowitchers. Both categories were used frequently by observers.

Incorrect identifications are also expected, but it is assumed that as observers become more experienced in conducting shorebird censuses, this factor will become less of a problem. It is usually impossible to determine misidentifications on the reporting forms during editing. However, unusual observations were looked at closely, and doubtful observations were discarded.

The influence of various weather conditions on shorebird numbers at a given site was not fully analyzed, however, indications are that under adverse weather conditions temporary changes in movement, resting, and feeding patterns occur. This may account for unusually high or low counts for some species.

Human disturbance was a factor influencing shorebird numbers in various situations. Activity by hunters during several census resulted in

unusually low numbers of shorebirds counted. On sandy beaches, dune buggy and other human activity occasionally hampered census attempts. Disturbance by the censusers, themselves, is not felt to be a problem except on beach transects where birds flush and resettle before the observer. In these cases, the observers must guard against recounting the same birds.

Unexpected changes in the habitat, such as the drying or flooding of ponds, or habitat destruction, often occurred. This caused reporting from some sites to be temporarily or permanently discontinued.

The major problem in obtaining useful information on seasonal abundance of shorebirds was the lack of regular reporting throughout the year from most sites. Factors responsible for this included (1) delays in beginning censuses at most sites resulting in poor coverage of early fall migrants; (2) progressive lack of enthusiasm of some observers resulting in infrequent reporting or premature termination of reporting; and (3) unexpected and unavoidable delays or termination of reports from some sites because of habitat changes.

Abundance notation used in this discussion is modified from terminology used by John Bull (1964), Birds of the New York Area:

1. Very abundant: more than 1,000 individuals observed per census

2. Abundant: 201-1,000 individuals observed per census.

3. Very common: 51-200 individuals observed per census.

4. Common: 21-50 individuals observed per census.

5. Fairly common: 7-20 individuals observed per census.

6. Uncommon: 1-6 individuals observed per census.

7. Rare: 1-6 individuals observed per season.

TABLE 1

Shorebird Species Recorded on the California Shorebird Survey, 1969-1970

Family	Species	
	Common Name	Scientific Name
Haematopodidae (Oystercatchers)		
	Black oystercatcher	Haematopus bachmani
Charadriidae (Plovers, Turnstones, and Surfbirds)		
	Semipalmated plover	Charadrius semipalmatus
	Snowy plover	Charadrius alexandrinus
	Killdeer	Charadrius vociferus
	Mountain plover	Eupoda montana
	American golden plover	Pluvialis dominica
	Black-bellied plover	Squatarola squatarola
	Surfbird	Aphriza virgata
	Ruddy turnstone	Arenaria interpres
	Black turnstone	Arenaria melanocephala
Scolopacidae (Woodcock, Snipe, and Sandpiper)		
	Common snipe	Capella gallinago
	Long-billed curlew	Numenius americanus
	Whimbrel	Numenius phaeopus
	Spotted sandpiper	Actitis macularia
	Solitary sandpiper	Tringa solitaria
	Wandering tattler	Heteroscelus incanum
	Willet	Catoptrophorus semipalmatus
	Greater yellowlegs	Totanus melanoleucus
	Lesser yellowlegs	Totanus falvipes
	Knot	Calidris canutus
	Pectoral sandpiper	Erolia melanotos
	Baird's sandpiper	Erolia bairdii
	Least sandpiper	Erolia minutilla
	Dunlin sandpiper	Erolia alpina
	Short-billed dowitcher	Limnodromus griseus
	Long-billed dowitcher	Limnodromus scolopaceus
	Western sandpiper	Ereunetes mauri
	Marbled godwit	Limosa fedoa
	Sanderling	Crocethia alba
Recurvirostridae (Avocets and Stilts)		
	American avocet	Recurvirostra americana
	Black-necked stilt	Himantopus mexicanus
Phalaropodidae (Phalaropes)		
	Red phalarope	Phalaropus fulicarius
	Wilson's phalarope	Steganopus tricolor
	Northern phalarope	Lobipes lobatus

TABLE 2

Census Sites Reporting During the
1969-70 California Shorebird Survey

SITE NO.	CENSUS SITE	COUNTY
S1-12-1	Humboldt Bay, Gillespie Ranch	Humboldt
S1-12-2	Humboldt Bay, South Spit - Sand Beach	Humboldt
S1-12-3	Humboldt Bay, South Spit - Mudflat	Humboldt
S1-12-4	Humboldt Bay, McDaniel Slough	Humboldt
S1-12-5	Humboldt Bay, Emmerson's Mill	Humboldt
S2-11-1	Sacramento National Wildlife Refuge	Glenn
S2-57-1	Woodland Sugar Ponds	Yolo
S3-48-1	Suisun Marsh, Joice Island	Solano
S3-21-1	Tomales Bay, Mouth of Walker Creek	Marin
S3-21-2	DeSilvas Lagoon and Strawberry Cove	Marin
S3-1-3	San Francisco Bay, Golden Gate Fields	Alameda
S3-1-1	Alameda, South Shore	Alameda
S3-1-2	San Francisco Bay, Emeryville Crescent	Alameda
S3-41-1	San Francisco Bay, Ravenswood Slough	San Mateo
S3-43-1	Palo Alto Marsh	Santa Clara
S3-43-2	Palo Alto Flood Basin	Santa Clara
S3-40-5	Morro Bay, Santa Ysabel	San Luis Obispo
S3-40-6	Morro Bay, Cuesta-By-The Sea	San Luis Obispo
S4-24-1	San Luis N.W.R., Moffat Field	Merced
S4-24-2	Kesterson N.W.R., Sprig Lake	Merced
S4-24-3	Merced N.W.R., Glory Hole	Merced
S4-15-1	Kern National Wildlife Refuge	Kern
S5-42-1	El Capitan Beach	Santa Barbara
S5-42-2	Goleta Slough	Santa Barbara
S5-42-3	Carpinteria Marsh	Santa Barbara
S5-42-4	Hollister-Cojo Beach	Santa Barbara
S5-19-1	Palos Verdes Peninsula	Los Angeles
S5-30-1	Bolsa Bay	Orange
S5-30-2	Upper Newport Bay	Orange
S5-37-1	South San Diego Bay, salt evaporating ponds	San Diego
S5-37-2	San Elijo Lagoon	San Diego
S5-37-3	Batiquitos Lagoon	San Diego
S5-37-4	Buena Vista Lagoon	San Diego
S5-37-5	San Diego River Flood Control Channel	San Diego

APPENDIX A

Census Sites Listed below were censused regularly, and discussions are provided with graphs showing seasonal abundance of shorebirds.

CENSUS SITE: Sacramento National Wildlife Refuge (S2-11-1)

LOCATION: Southern Glenn County, south of Willows

DIRECTIONS FOR CONDUCTING CENSUS: Censuses are conducted from dike roads throughout Refuge area where Shorebird habitats occur.

OBSERVER: Richard D. Bauer, Route 1, Box 311, Willows 95988

RESULTS: Eleven censuses were conducted between November 20, 1969 and May 13, 1970. No counts were made in February. A storm on March 4 significantly influenced shorebird numbers at this site. Shorebirds had been abundant prior to the storm, but on March 5 census only 132 were counted. The birds were again abundant a week later, when more than 2,500 were seen.

Total Shorebird Numbers: As shown in Figure 1, peak shorebird numbers were counted in March; most of these were dunlins. This peak was preceded by a low December population. The shorebird population again dropped to the December level by early May.

Plovers, Turnstones and Surfbirds: Except for the appearance of 19 black-bellied plovers on one census in March, the only charadriids seen were killdeer. They were fairly common during fall and winter censuses and became common in early spring. A peak of 40 was counted on May 13.

Sandpipers: Long-billed curlews were seen only in December, when eight were counted on both censuses, and in March, when one or two were seen. Greater yellowlegs were generally fairly common from November through March, but they were uncommon in April. Long-billed dowitchers, as shown in Figure 1, were generally abundant throughout the reporting period. Greatest numbers occurred in late March.

Figure 1 also shows the seasonal occurrence of dunlins. These were very common to abundant in late fall, but were not seen on the single January census. 2,500 were present in late March, and they were still abundant in April. None were seen in mid-May. Western sandpipers were first seen in mid-December and were generally abundant until mid-May. A peak of 550 was counted in late April. Least sandpipers were recorded only on the December and January censuses. A maximum of 60 was counted on the January census.

Common snipes were recorded on all censuses from November 20 to March 5. They were fairly common in fall and uncommon in winter.

Sandpiper species not recorded at this site included the whimbrel, willet, short-billed dowitcher, and marbled godwit.

Avocets and Stilts: American avocets were fairly common throughout the reporting period. They were most numerous in April, when up to 80 were present. Black-necked stilts were fairly common in early spring but were not present during censuses in late fall and in winter.

Phalaropes: None were recorded.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE SACRAMENTO NWR (2-11-1)

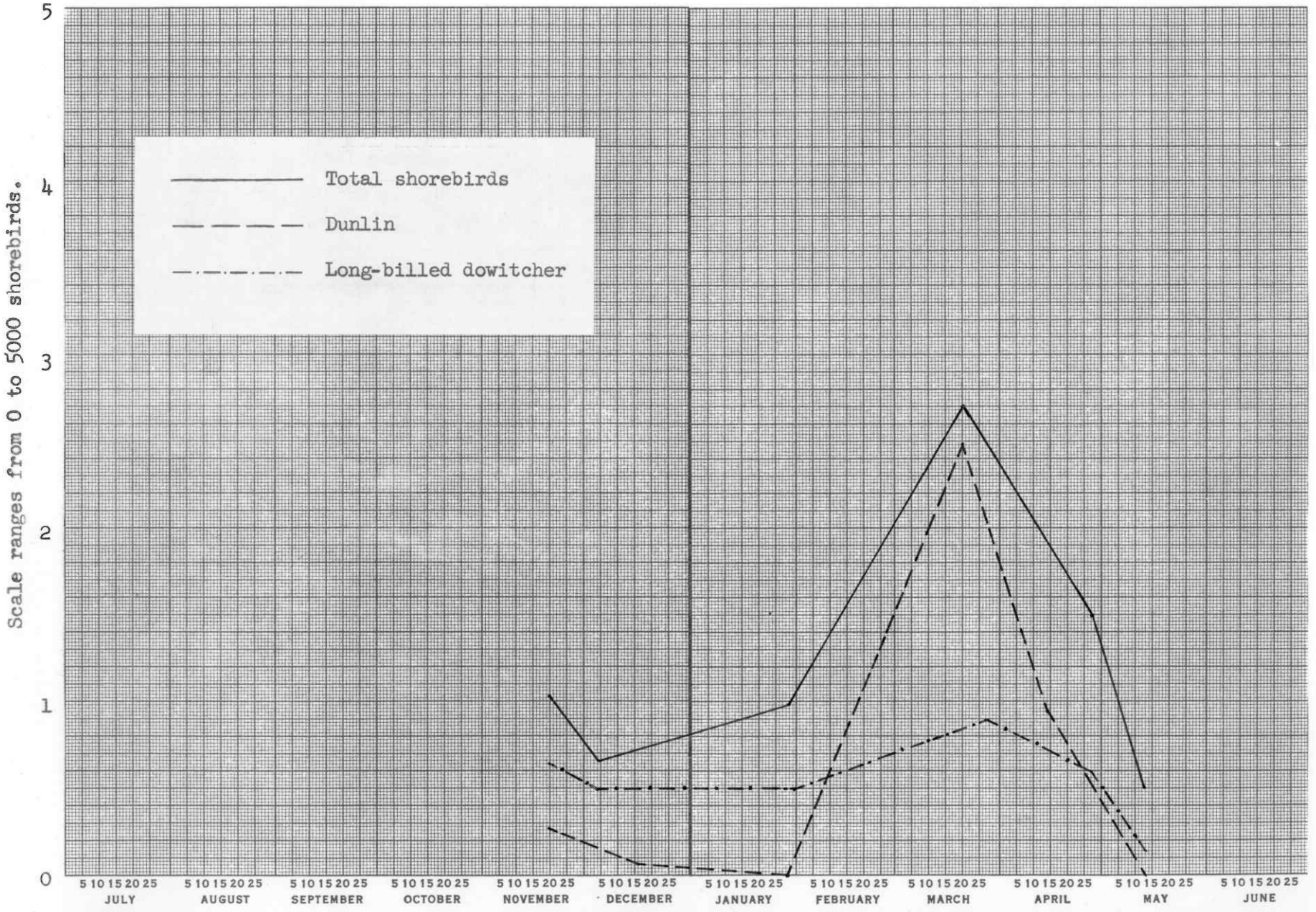


Figure 1. Monthly high counts of dunlins, long-billed dowitchers, and all shorebirds. No censuses were conducted in February.

CENSUS SITE: Woodland Sugar Ponds (S2-57-1)

LOCATION: Approximately two miles east of Woodland in Yolo County. From Interstate 5 between Woodland and Sacramento, turn north on Road 102 and continue $\frac{1}{2}$ mile to the intersection with Road 20.

DIRECTIONS FOR CONDUCTING CENSUS: Census all 16 sedimentation ponds by car or on foot, depending on road and weather conditions.

OBSERVERS: Bob Burks, 7142 Goodyear Drive, Fair Oaks
Robert and Ruth Loveless, 4135 C Street, Sacramento
Steve and Margaret Speich, 3324 Belden Street, Sacramento 95838
Elizabeth G. Kimball, 2133 35th, Sacramento 95817
Cora Baker, 5111 42nd Street, Sacramento 95820
Ed and Marian Warner, 811 Rosewood Way, Woodland 95695

RESULTS: Forty-eight censuses were conducted between July 11, 1969 and May 31, 1970. Water levels continually change in the 16 spreading basins, so census site conditions differ from week to week. Shooters are a common source of disturbance to the birds in the area, and their presence might explain the lower than expected numbers of shorebirds counted on some censuses.

Total Shorebird Numbers: As shown in Figure 1, numbers of shorebirds increased throughout late summer and early fall to a peak (4,040) in early November. After a substantial decline in the winter population, numbers again built up in March to a peak in early April (3,380). Numbers had again declined to the early winter level by late May.

Plovers, Turnstones and Surfbirds: Killdeer (Figure 2) were common to abundant in summer and fall and reached a peak of 700 on September 10. They were common in winter and spring, increasing to 89 by the end of May. One to three black-bellied plovers were occasionally seen in summer. In the fall they were fairly common from mid-November to mid-December. None were seen in the winter, but they became very common in early April. No black-bellied plovers were seen after April 12, when a peak of 124 was counted.

A few semipalmated plovers were occasionally seen in July and August. None were seen again until mid-April through the end of May, when one to five were usually present. Snowy plovers were also uncommon; they were seen only in April and May. Mountain plovers were observed on two censuses; one was seen on March 4 and ten were counted on March 18.

Sandpipers: The small sandpiper species observed at this site included dunlin, least, western, Baird's and pectoral sandpipers.

Single Baird's sandpipers were seen on August 31 and April 25. Three pectoral sandpipers were counted during censuses on August 31 and September 14. Dunlin, least and western sandpipers usually accounted for the majority of all shorebirds seen during the fall and winter censuses. Dunlins were the most numerous shorebirds in November. They were first observed on October 12 and were very abundant through the fall. They were very common to abundant in the winter. A spring peak of 1,000 was counted on April 1, and they remained abundant until mid-April. Numbers then declined, and the dunlins were gone from the area by the last week of May.

Least sandpipers were present throughout the reporting period. A peak of over 1,000 was reached in mid-April. Western sandpipers were present throughout the survey period except in early and mid-winter. Because the small sandpipers were often not listed to species on the reporting forms, the population fluctuations of each species could not be determined adequately.

Long-billed curlews were seen mainly in September, and numbers fluctuated greatly from census to census. A maximum of 800 was counted on September 25. A few were seen again only in December and April. Two whimbrels were recorded only on April 4.

From 1 to 30 greater yellowlegs were present throughout the summer, mostly in July and early September. They were rare in fall and winter. From 1 to 6 were seen in early April, when they were last recorded. Lesser yellowlegs were uncommon in early summer. A few were seen in late August, and one was observed on October 12.

Dowitchers were very common to abundant from July to early November (Figure 1). They were not seen again until late winter, when they became very abundant. A peak of 2,000 was counted on April 1. They remained very common to abundant until mid-May. Most, if not all, of the dowitchers at this site were the long-billed species.

Marbled godwits were uncommon in the summer. A maximum of 13 was counted on August 23. None were seen in fall and winter, but a few were present again on April 1 and in late May.

One solitary sandpiper was seen only on May 16. Single spotted sandpipers were recorded on August 3 and May 10. One common snipe was recorded on August 11, and several were seen in early fall.

Avocets and Stilts: Seasonal occurrence of American avocets and black-necked stilts is graphed in Figure 2. Avocets were

very common to abundant throughout the reporting period, except in January and February when none were present. A peak of 750 was counted on July 11. Black-necked stilts were common to very common in the summer. None were seen in fall and winter, but they were fairly common to common again in April and May. Both species are known to nest here.

Phalaropes: Wilson's phalaropes were generally very common to abundant during the summer. A peak of 372 was counted on July 18. They were fairly common in May, and a peak spring total of 51 was counted on May 2. Northern phalaropes were rare in early summer but became very common in September. They were common again in late May. No red phalaropes were seen.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE WOODLAND SUGAR PONDS (2-57-1)

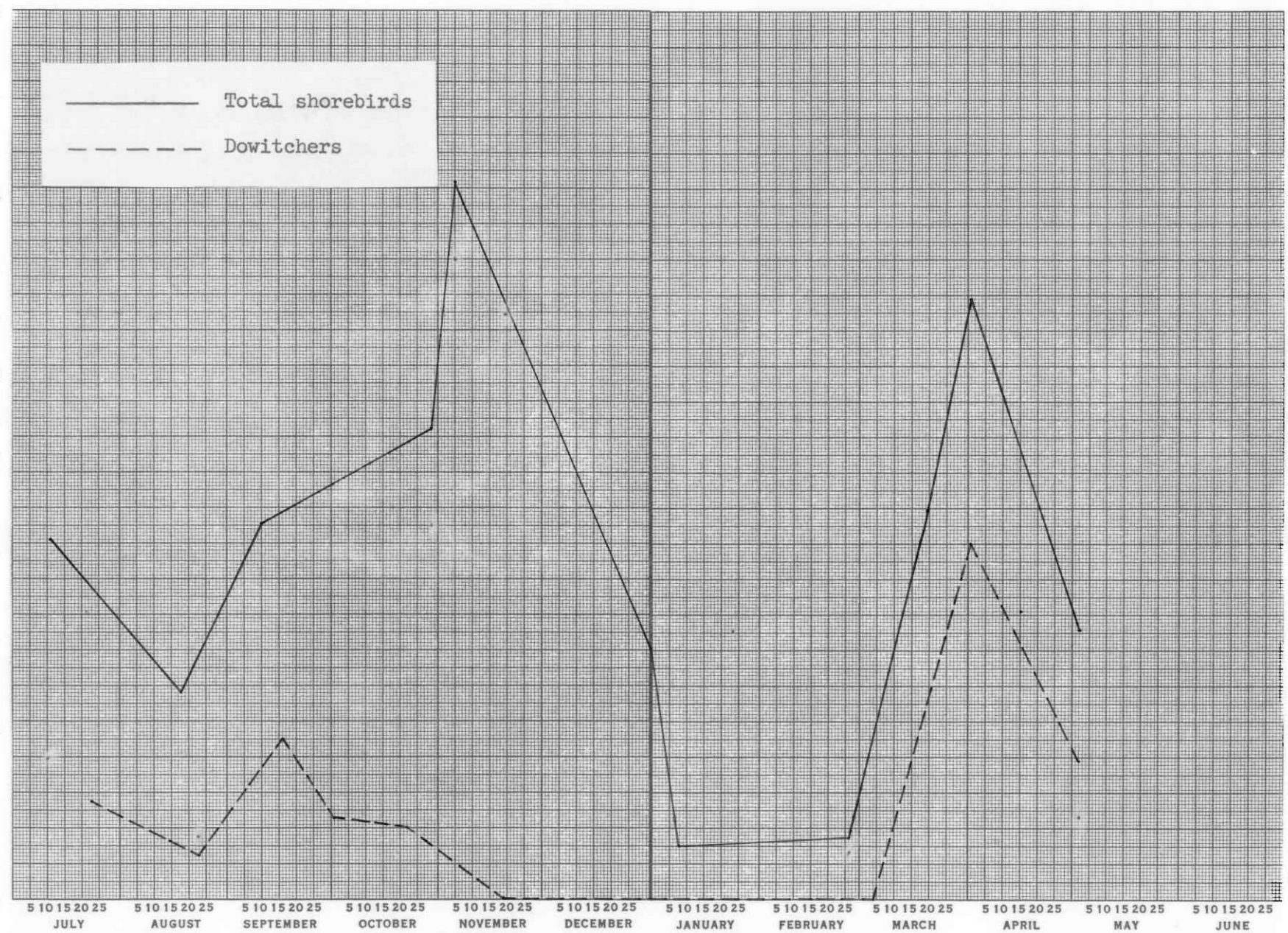


Figure 1. Monthly high counts of dowitchers and all shorebirds.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE WOODLAND SUGAR PONDS (2-57-1)

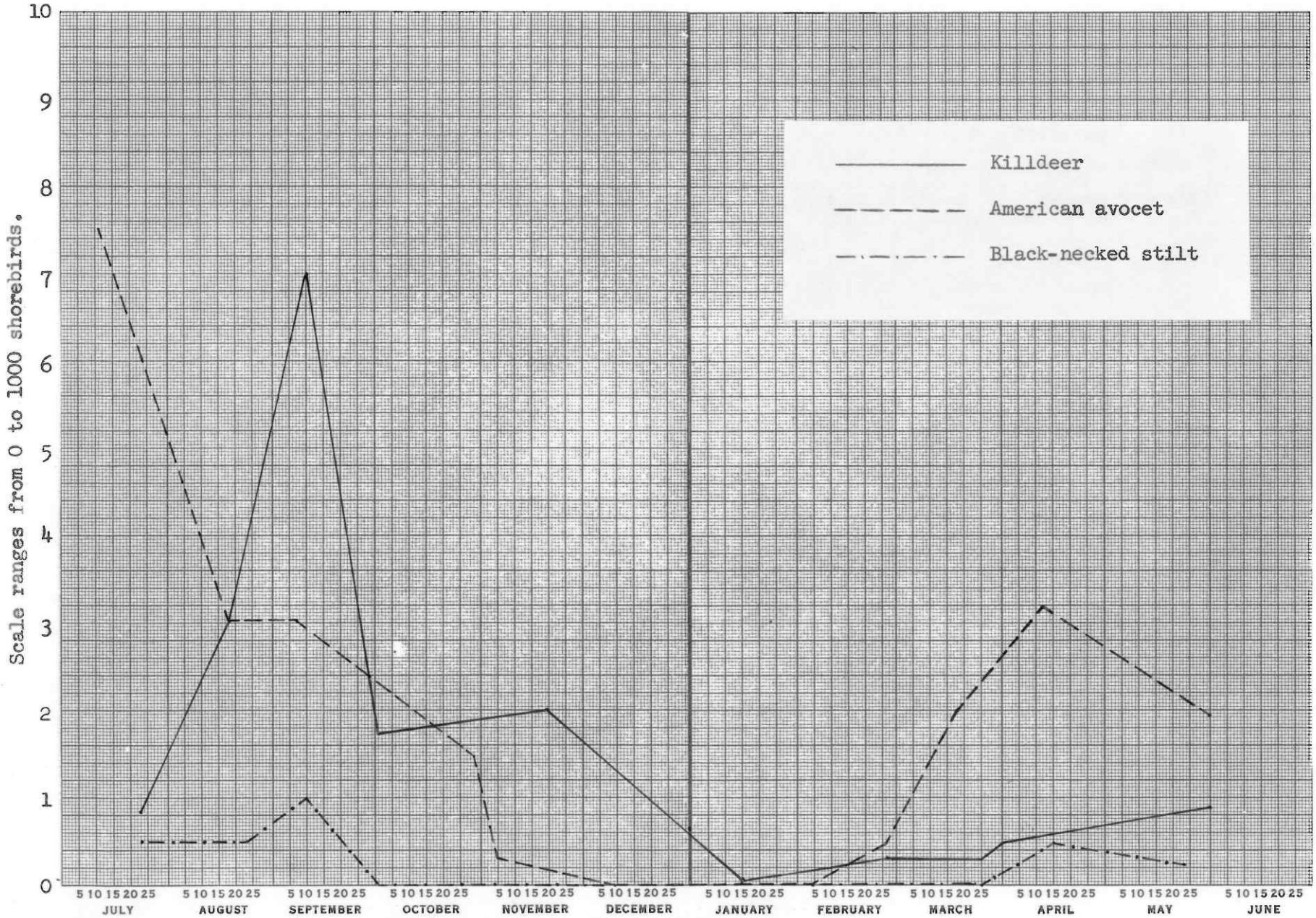


Figure 2. Monthly high counts of killdeer, American avocets, and black-necked stilts.

CENSUS SITE: Mouth of Walker Creek (S3-21-1)

LOCATION: North end of Tomales Bay near the mouth of Walker Creek, Marine County

DIRECTIONS FOR CONDUCTING CENSUS: Park along the west side of Highway 101 overlooking the marsh north of the Jensen Oyster Beds. From the road, census shorebirds on the mudflats west of the highway.

OBSERVERS: Merl A. Sturgeon, 2140 Greenhill Road, Sebastopol 95472
William H. Thomson, 40 Millay Place, Mill Valley 94941
Jerry Markel, P. O. Box 368, Suisun City 94585

RESULTS: Twenty-nine censuses were conducted regularly between September 8, 1969 and May 28, 1970. Counts were usually made during low tide.

Total Shorebird Numbers: As shown in Figure 1, the shorebird population increased steadily from late summer to a peak of 4,409 in early December. Numbers declined greatly in January. A smaller peak occurred in early March (2,619), and this was followed by steadily decreasing numbers from late winter to the end of May.

Plovers, Turnstones and Surfbirds: Seasonal occurrence of black turnstones and black-bellied plovers is graphed in Figure 2. Black turnstones were common to very common from September until early January. Large numbers were seen occasionally in the winter and in early April. Peaks of nearly 80 black turnstones occurred in early September and mid-February. Few black turnstones remained by mid-May. Black-bellied plovers were generally common from early September until the end of fall. None were seen in January, and they were uncommon during the remainder of winter and early spring. A spring peak of 21 was counted on April 30.

Killdeer were uncommon in the fall, and a peak of 14 was recorded on September 29. None were present during the winter, and one or two were seen occasionally in spring. Semipalmated plovers were seen on only the April 30 census, when 38 were counted.

Ruddy turnstones were rare in September, the only month they were recorded. No snowy plovers or surfbirds were seen.

Sandpipers: Small sandpipers (dunlin, least, and western sandpipers) were the most abundant shorebirds seen at this site. These three species were counted together as "sandpiper species" on the report forms. Sanderlings were most abundant in September, when 600 were counted. They decreased in abundance throughout fall, and none were recorded after December 3.

The seasonal population fluctuations at this site of marbled godwits, dowitchers, and willets are shown in Figure 3. Marbled godwits were a very common fall migrant. Numbers fluctuated greatly during winter censuses, and a peak population of 290 was recorded on March 10. Godwits remained very common as late as mid-May.

Dowitchers were generally common in September and early fall. These were identified as the long-billed species. A fall migration peak of 100 was recorded on September 16. None were seen from mid-November until early April. A spring peak of 110 was counted on April 23, but none remained after mid-May. The spring dowitchers were not identified to species.

Willets were very common throughout the reporting period. A peak of 230 occurred in mid-November. One or two greater yellowlegs were occasionally seen in September and again in March. On April 2, however, 64 were counted. None were seen after this date. One or two whimbrels were seen only in late April and early May. No long-billed curlews or knots were recorded.

Avocets and stilts: One American avocet was seen only on September 16, and no black-necked stilts were recorded.

Phalaropes: None were recorded.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE MOUTH OF WALKER CREEK (3-21-1)

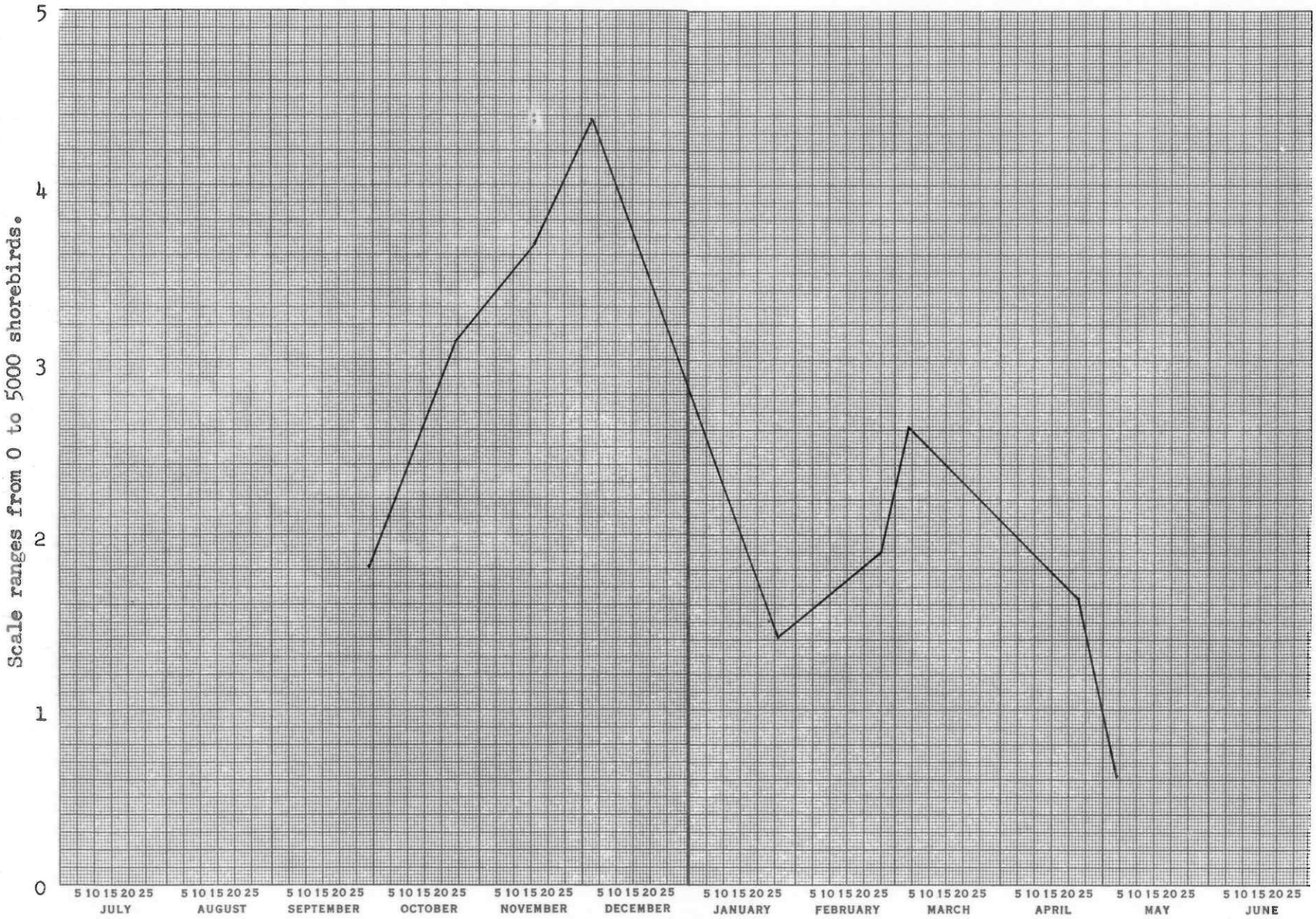


Figure 1. Monthly high counts of all shorebirds.

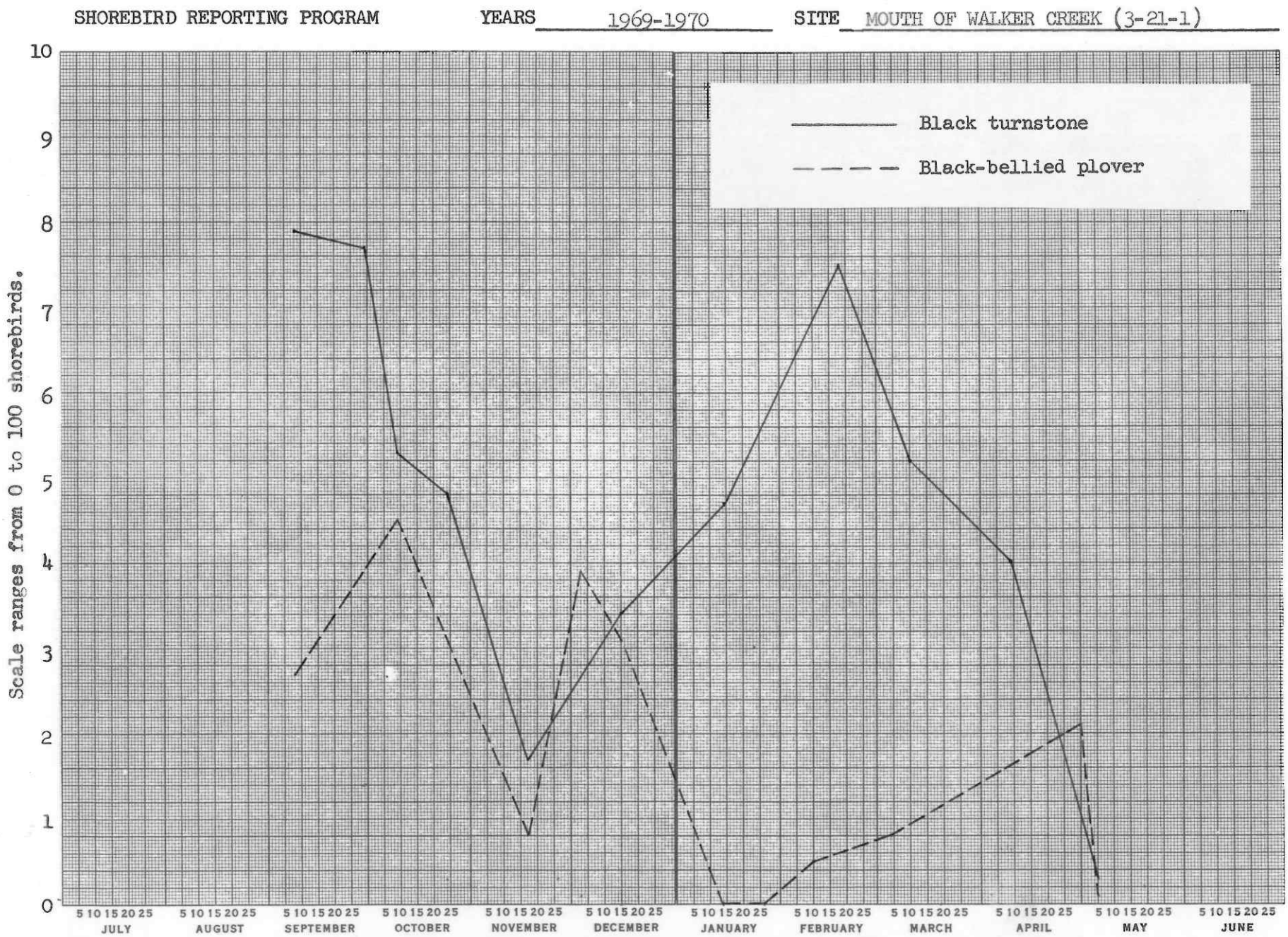


Figure 2. Monthly high counts of black turnstones and black-bellied plovers.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE MOUTH OF WALKER CREEK (3-21-1)

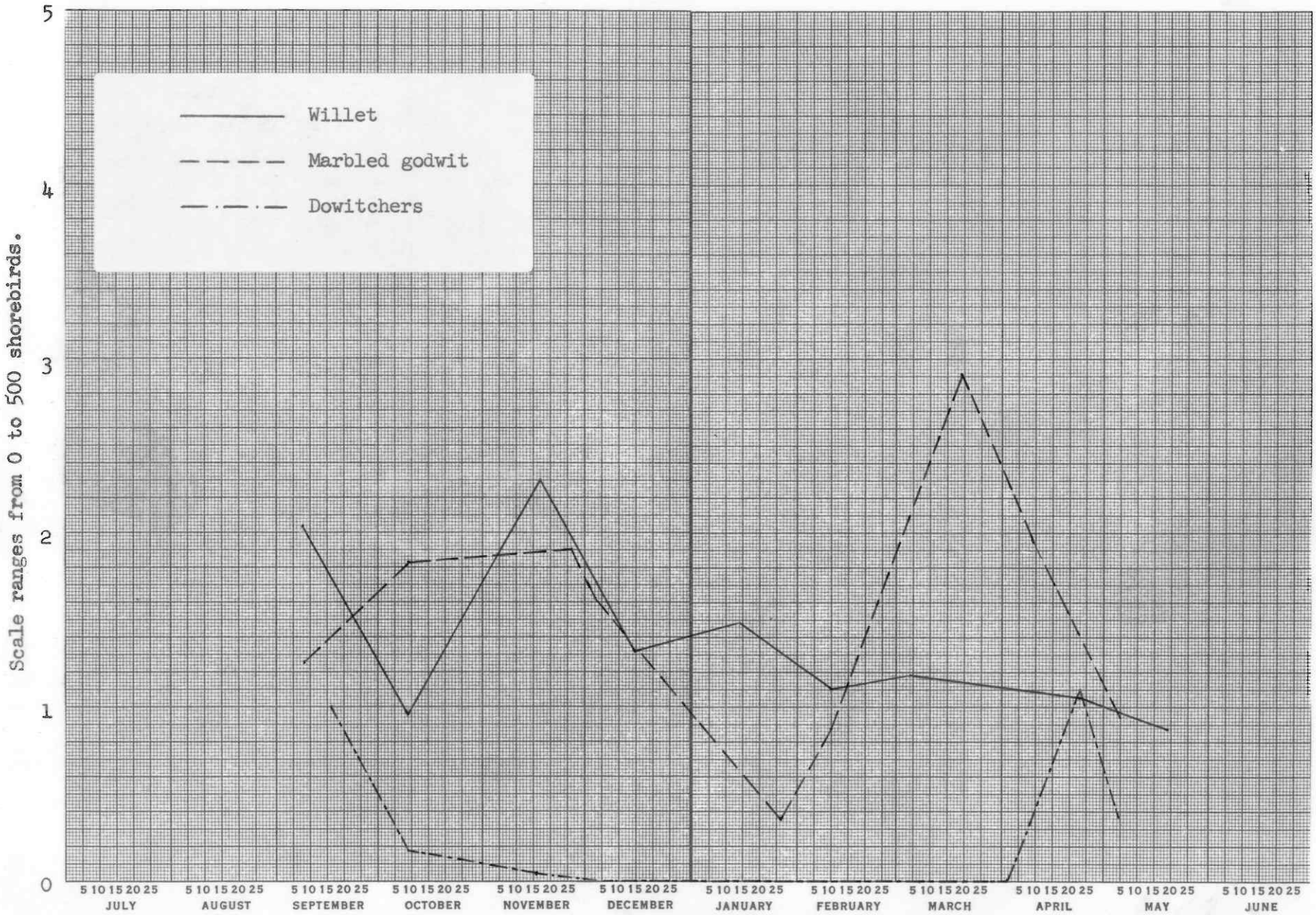


Figure 3. Monthly high counts of willets, marbled godwits, and dowitchers.

CENSUS SITE: Richardson Bay, Strawberry Cove (S3-21-2) (also called Seminary Bay)

LOCATION: On the west shore of San Francisco Bay in south Marin County, approximately three miles north of the Golden Gate. Take the Seminary exit from northbound Highway 101, then turn right at the Standard Station, and continue to the shore.

DIRECTIONS FOR CONDUCTING CENSUS: Census the mudflat behind the gas station. Turn right and drive along the bay to the small cove below the seminary.

OBSERVERS: Anne T. Williams, 2627 21st Street, San Francisco 94110

RESULTS: Twenty censuses were conducted from July 20 to December 31, 1969. Three other counts were made in February, 1970. Only the summer and fall censuses are graphed in Figures 1 and 2. Censuses were usually conducted at low tide when shorebirds were feeding on the mudflats.

Total Shorebird Numbers: The shorebird population increased steadily from generally low numbers in summer to a peak of 4,324 in late November (Figure 1). A small peak in late July occurred when an early arrival of 800 western sandpipers was recorded. Numbers declined in late fall. The highest count in February was only 850 shorebirds.

Plovers, Turnstones, and Surfbirds: Populations of killdeer and black-bellied plovers are shown in Figure 2. Killdeer were uncommon, and black-bellied plovers were uncommon to fairly common throughout the reporting period. Maximums of 15 black-bellied plovers were recorded on censuses in December and February. Three black turnstones were reported only on September 17, and there were no observations of semipalmated plovers, snowy plovers, ruddy turnstones, or surfbirds.

Sandpipers: The small sandpiper species (dunlin, least and western sandpipers) were the most numerous shorebirds recorded at this site. Figure 1 shows the summer and fall population fluctuations of these three species. Western sandpipers were usually very common to abundant, although none were recorded during any of the September censuses. Least sandpipers became abundant in September, and about 800 were regularly counted in October and November. A substantial decrease in numbers occurred in December, and only one was seen in February. Dunlins first appeared on October 16. They became very abundant in November, when up to 3,500 were present. In December and mid-winter, they were very common to abundant.

Willets were common in early and mid-summer and in late fall (Figure 2). They were fairly common during most of the fall migration. In February, they became very common when a peak of 80 was recorded. From 1 to 5 greater yellowlegs were often present throughout the reporting period.

From 1 to 6 spotted sandpipers were occasionally reported, mostly in early August and early fall. One long-billed curlew was regularly recorded during the fall censuses. Whimbrels were seen on only two early summer censuses--one in late July and 20 in mid-August.

Rare occurring species at this site included one long-billed dowitcher recorded in July, one sanderling in November, and one marbled godwit in December. No short-billed dowitchers or knots were reported.

Avocets and stilts: As shown in Figure 2, American avocets were first seen in mid-September. They were common in fall and in February. A maximum of 57 was recorded at the end of December. No black-necked stilts were reported.

Phalaropes: None were recorded.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE RICHARDSON BAY - STRAWBERRY COVE (3-21-2)

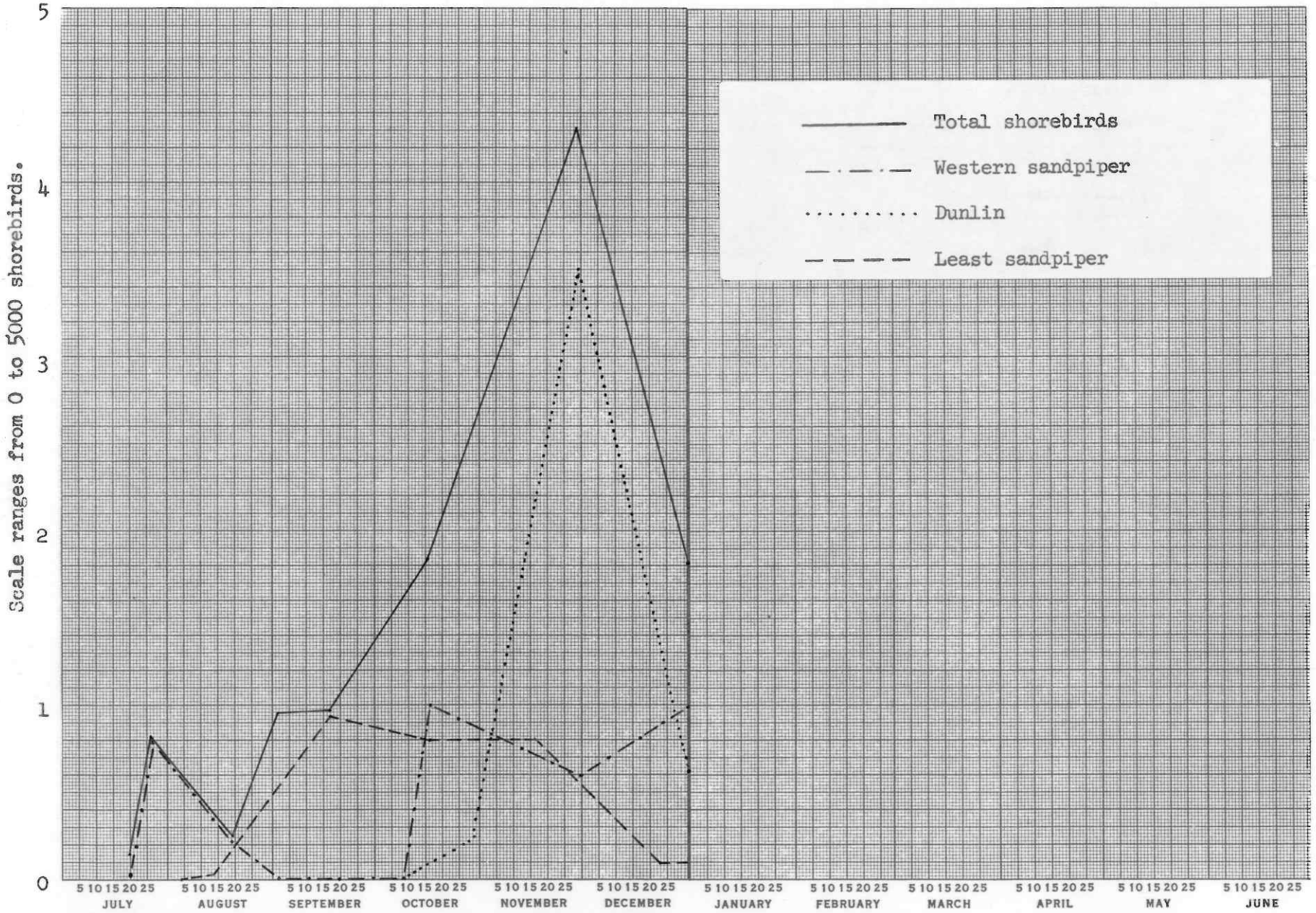


Figure 1. Monthly high counts of western sandpipers, dunlins, least sandpipers, and all shorebirds.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE RICHARDSON BAY - STRAWBERRY COVE (3-21-2)

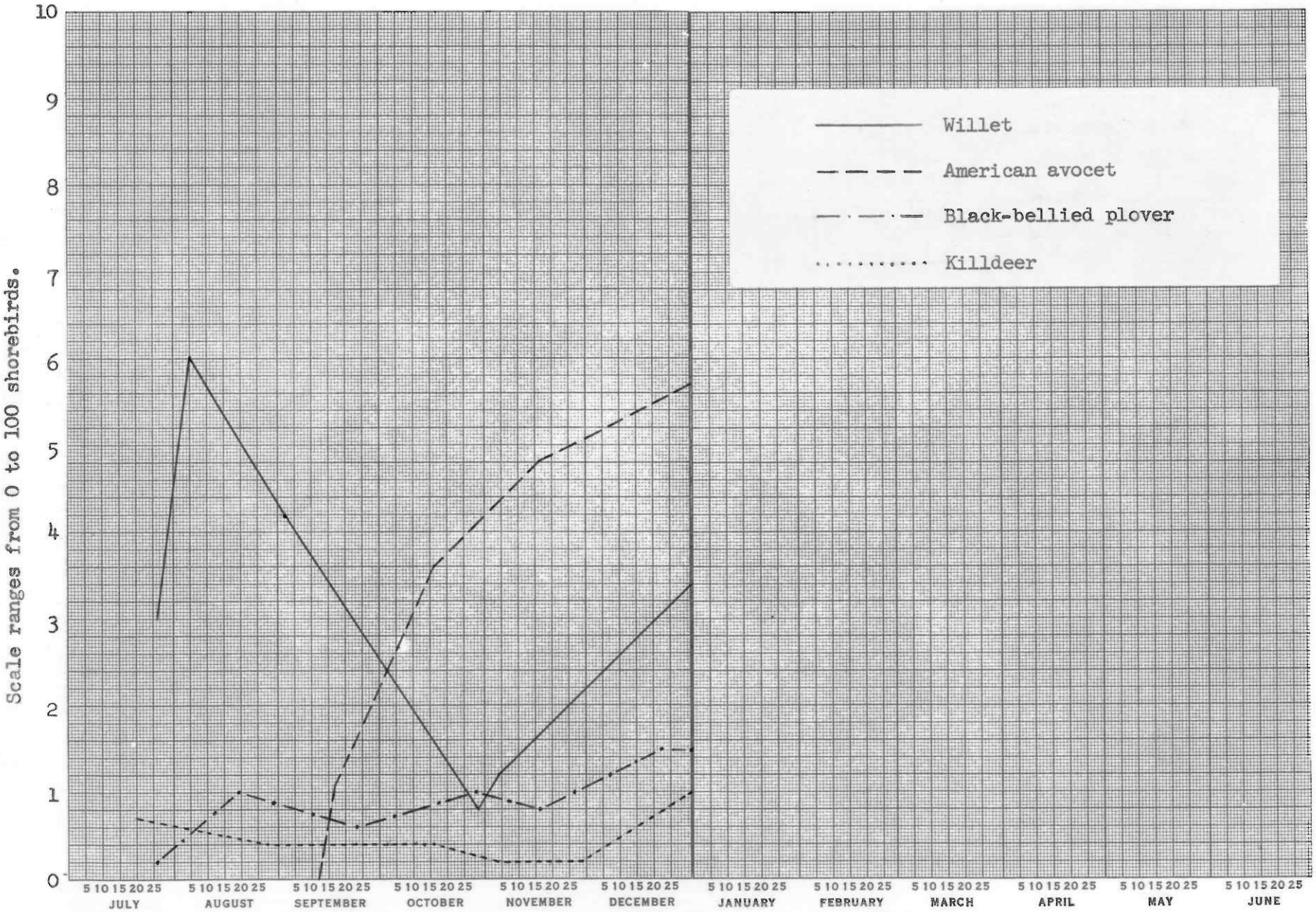


Figure 2. Monthly high counts of willets, American avocets, black-bellied plovers, and killdeer.

CENSUS SITE: San Francisco Bay, Golden Gate Fields (S3-1-3)

LOCATION: North side of Golden Gate Fields at the foot of Buchanan Street in Albany, Contra Costa County. Take the Albany exit from Interstate 80, and follow the blue "Race Track" signs to the bay. Park near the Albany garbage dump.

DIRECTIONS FOR CONDUCTING CENSUS: Census birds on the mudflat in the cove. Use a spotting scope and count the birds as far away as species identification is possible. Then drive to the rock wall at the west end of the race track parking lot, and census birds on the rocks and sandy beach.

OBSERVERS: Violet G. Homem, 6911 Armour Drive, Oakland 94611
Mrs. Leonard Machlis, 1871 Thousand Oaks Boulevard, Berkeley
Alice Mericourt (no address given)
William Pursell (no address given)

RESULTS: Sixteen censuses were conducted bi-monthly from October 20, 1969 through May 18, 1970. From October 20 until December 2, censuses were conducted at low tides. After December 2, all counts were conducted during ebb tides. It cannot be determined at this time whether this change in census procedure significantly influenced the numbers of shorebirds reported.

Total Shorebird Numbers: As shown in Figure 1, highest numbers of shorebirds were counted in fall, and a peak of 4,737 occurred on November 19. Numbers steadily declined to a mid-winter and early spring level of about 2,500 shorebirds. A substantial decrease in the shorebird population took place in May. No increase in numbers was observed in spring.

Plovers, Turnstones, and Surfbirds: Figure 2 shows the results of censuses of black-bellied plovers and killdeer. Black-bellied plovers were most numerous in November, when a peak of 152 was recorded. They were generally common in fall and winter. Lowest winter totals occurred in February. Numbers of killdeer fluctuated from 2 to 18 during fall censuses. They were common through winter, when up to 40 were seen, but they were uncommon in early spring.

A few semipalmated plovers were seen on only two censuses in late April and early May. From 1 to 5 black turnstones were occasionally reported on the mudflat or on the rocks in fall, late winter, and early spring. No snowy plovers, ruddy turnstones or surfbirds were reported.

Sandpipers: The small sandpiper species (dunlin, least and western sandpipers) were the most numerous shorebirds seen at this site throughout the reporting period. The combined totals of these three species usually numbered from 2,000 to 3,000. Each species was difficult to count, so they were usually

classified on the report forms as unidentified sandpiper species. Sanderlings were uncommon to fairly common throughout the reporting period and were usually observed on the mudflat. A maximum of 25 was recorded on April 6.

The census results for willets, marbled godwits, and dowitchers are shown in Figure 3. Willets were common to abundant in fall and winter. Greatest numbers, up to 267, were recorded in the fall. Few remained by mid-spring. Marbled godwits were very common in the fall, but during the winter and spring they generally were fairly common.

Dowitchers were common on the mudflats in October but uncommon in November. They were again very common from mid-December until late April, when they were last seen. Greatest numbers, up to 165, were counted in early spring. Dowitchers at this site generally were not distinguished to species; however, the short-billed species was common during censuses in December and February.

One spotted sandpiper was often seen on the rocks during fall censuses, and one was observed in February. Five knots were recorded only on January 19. No greater or lesser yellowlegs were recorded.

Avocets and stilts: American avocets were an abundant fall migrant, and they were very common to abundant in the winter. A peak of 496 was recorded in mid-December. In late winter and early spring the population declined greatly and only a few remained in May (Figure 2). No black-necked stilts were reported.

Phalaropes: None were recorded.

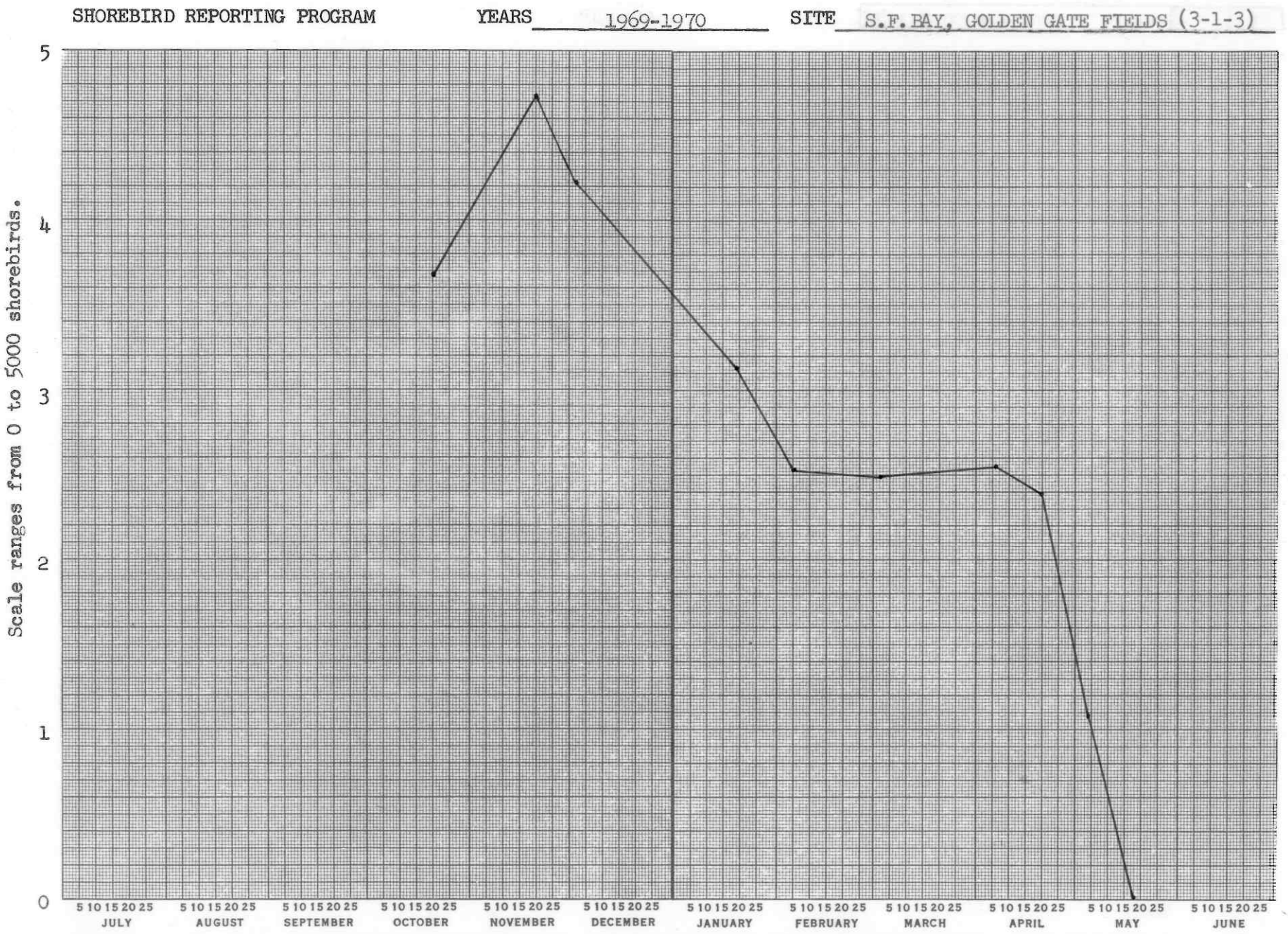


Figure 1. Monthly high counts of all shorebirds.

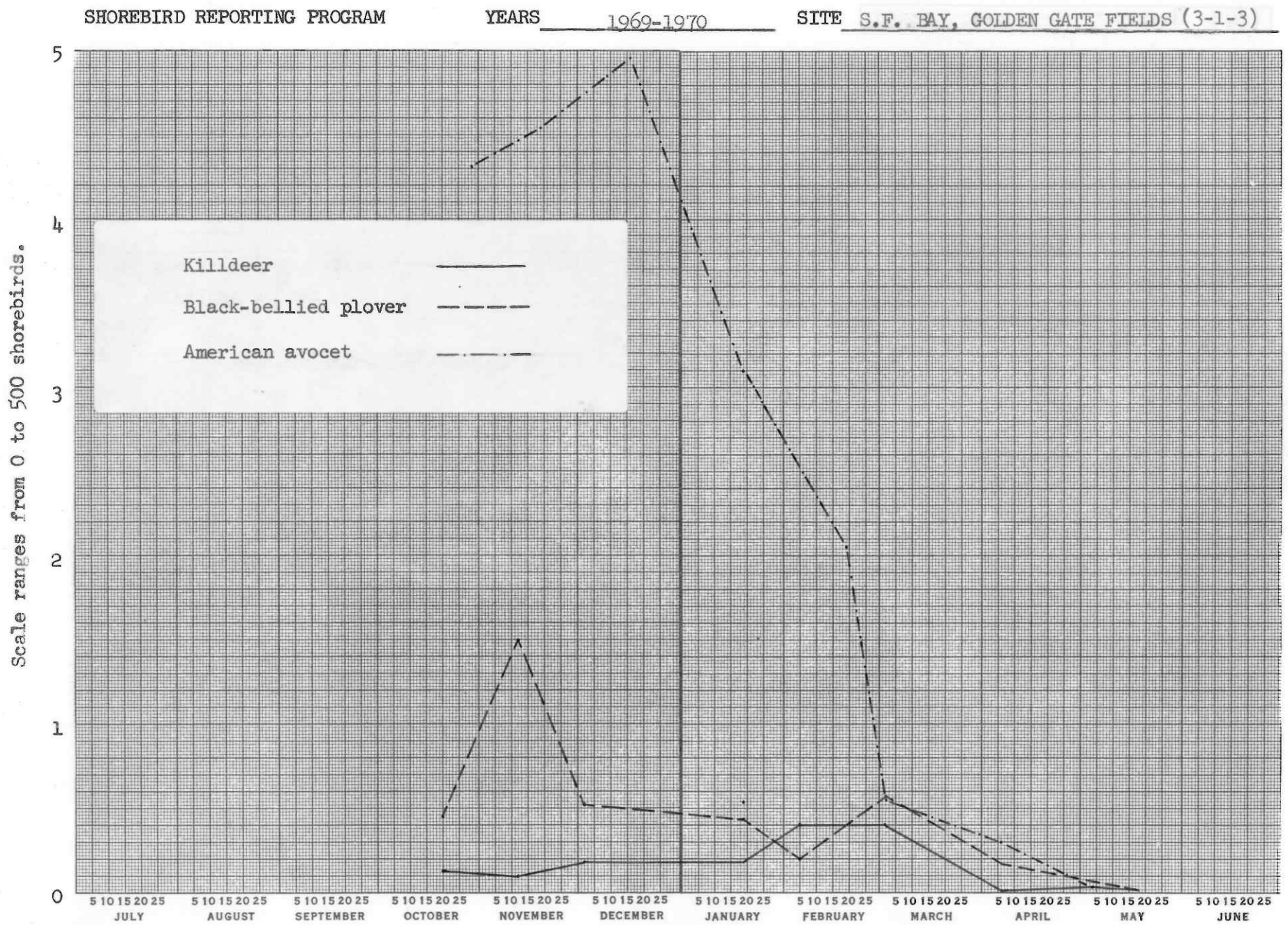


Figure 2. Monthly high counts of killdeer, black-bellied plovers, and American avocets.

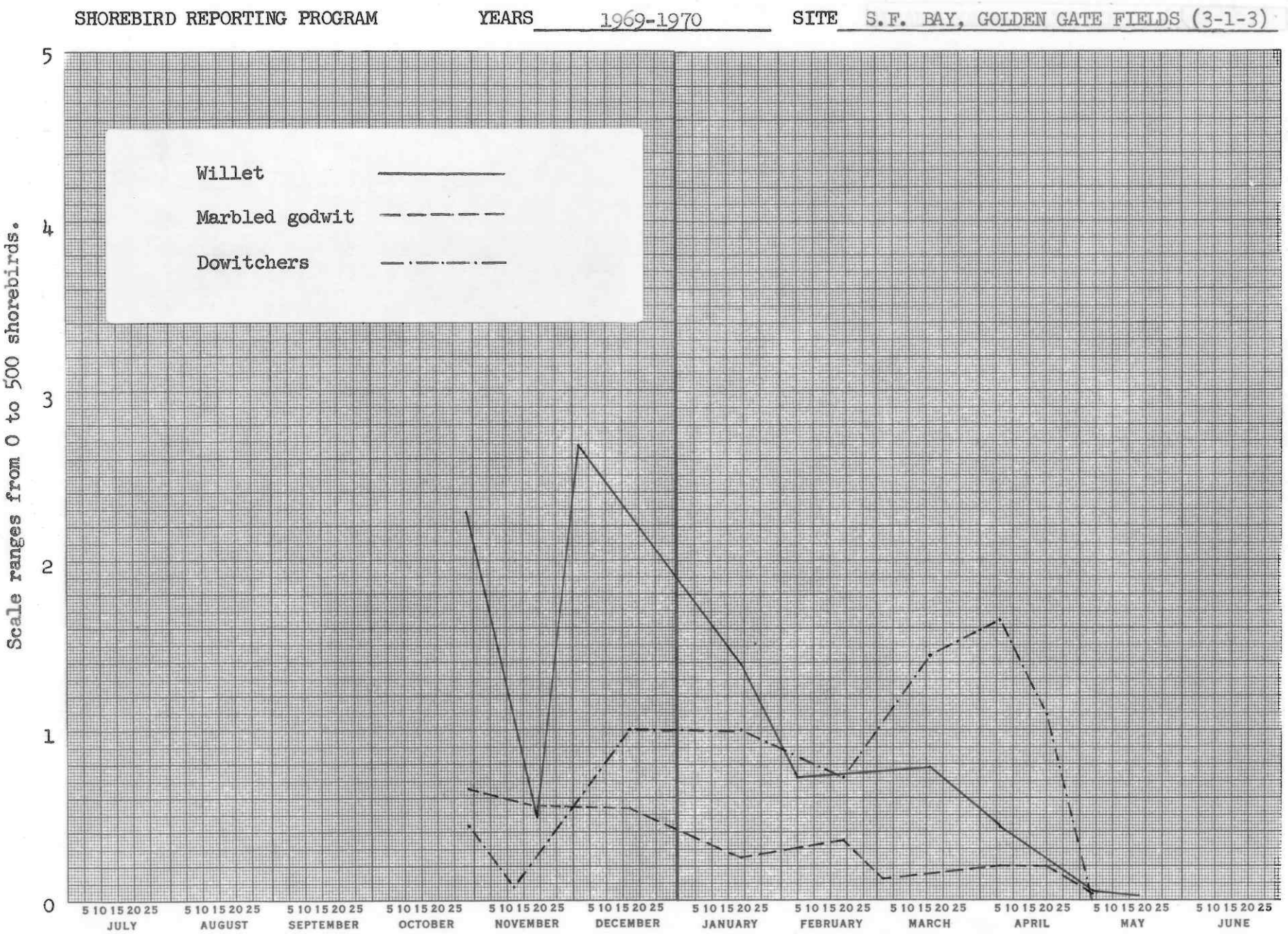


Figure 3. Monthly high counts of willets, marbled godwits, and dowitchers.

CENSUS SITE: Alameda, South Shore (S3-1-1)

LOCATION: East shore of San Francisco Bay at Alameda, Alameda County

DIRECTIONS FOR CONDUCTING CENSUS: Census shorebirds on the mudflat along Bayview Drive between Park and High Streets.

OBSERVERS: Clarence B. Maynard, 1512 Rose Street, Berkeley
Elsie Roemer, 1556 Everett Street, Alameda
Gertrude Bialos, San Leandro
Mrs. Dannie Jones, Piedmont
Myra Brown, San Leandro
Ted Dement, Albany
Martha Landis, Oakland
Garth Alton, El Cerrito
Bill Fletcher, Oakland
Dick Erickson, Oakland

RESULTS: Thirteen censuses were conducted bimonthly from November 26, 1969 to May 20, 1970. All censuses were made at low tide.

Total Shorebird Numbers: Figure 1 shows that greatest numbers of shorebirds utilized this site in the fall. A substantial decrease in numbers of wintering shorebirds occurred in January; but high numbers again were present in late winter. A steady decline in the shorebird population followed the March peak, and by early May relatively few birds remained.

Plovers, turnstones, and surfbirds: Semipalmated plovers were very common in November, when a maximum of 92 was counted (Figure 2), but they were uncommon in December. A smaller peak of 65 occurred in late February, and they were common in late winter and early spring. Figure 2 shows that black-bellied plovers were most numerous in the fall, when up to 218 were counted. A substantial drop in numbers occurred in January and February, but they were again very common in late winter and early spring.

From 1 to 8 snowy plovers were occassionally seen on mud or sand habitats in late fall and early winter. They were rare in the spring. Killdeer were uncommon during fall and winter, and a maximum of 16 was seen on January 28. They, too, were rare in spring.

Ruddy turnstones were an uncommon fall migrant, and they were rare in winter. One black turnstone was seen on January 9th. No surfbirds were recorded.

Sandpipers: The small sandpiper species (i.e., dunlin, least, and western sandpipers) were the most abundant shorebirds.

Although these were not always tallied separately on the reporting forms, the censuses show that dunlins were abundant to very abundant from November to early April. Greatest numbers were counted in November (1,341) and in February (1,565). Lowest counts of wintering dunlins occurred in January. Only a few dunlins were seen after early April. Western sandpipers were abundant throughout the reporting period. Least sandpipers apparently were less numerous than dunlins and western sandpipers. Sanderlings were abundant in November but were generally uncommon in late fall and in winter. They were usually counted on the mudflats.

Marbled godwits (Figure 3) were abundant in late fall. Few were seen in early winter, but they became very common again from mid-winter to early spring. Figure 3 also shows that willets were abundant in late fall and very common in middle and late winter. Pairs of greater yellowlegs were occasionally seen in late winter and in May.

Dowitchers were most abundant in late winter and early spring, when up to 401 were seen. They were fairly common to very common at other times of the year. Most of the winter dowitchers were identified as the short-billed species, and both short-billed and long-billed dowitchers were reported in large numbers in late winter. One knot and one spotted sandpiper were recorded only on December 11.

Avocets and stilts: Figure 3 shows that American avocets were very common to abundant in the fall. They were common to very common in winter and early spring. No black-necked stilts were recorded.

Phalaropes: None were recorded.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE ALAMEDA, SOUTH SHORE (3-1-1)

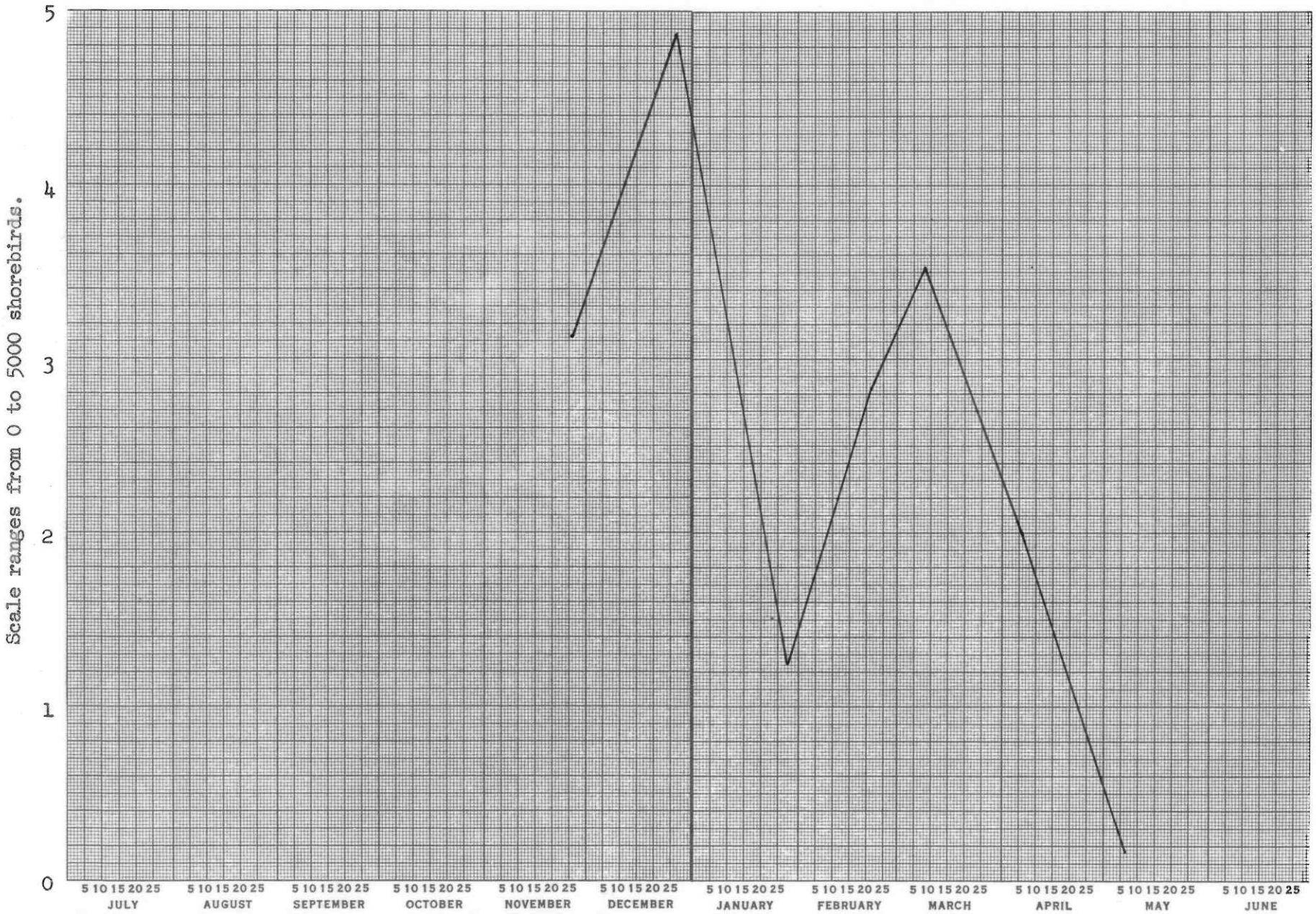
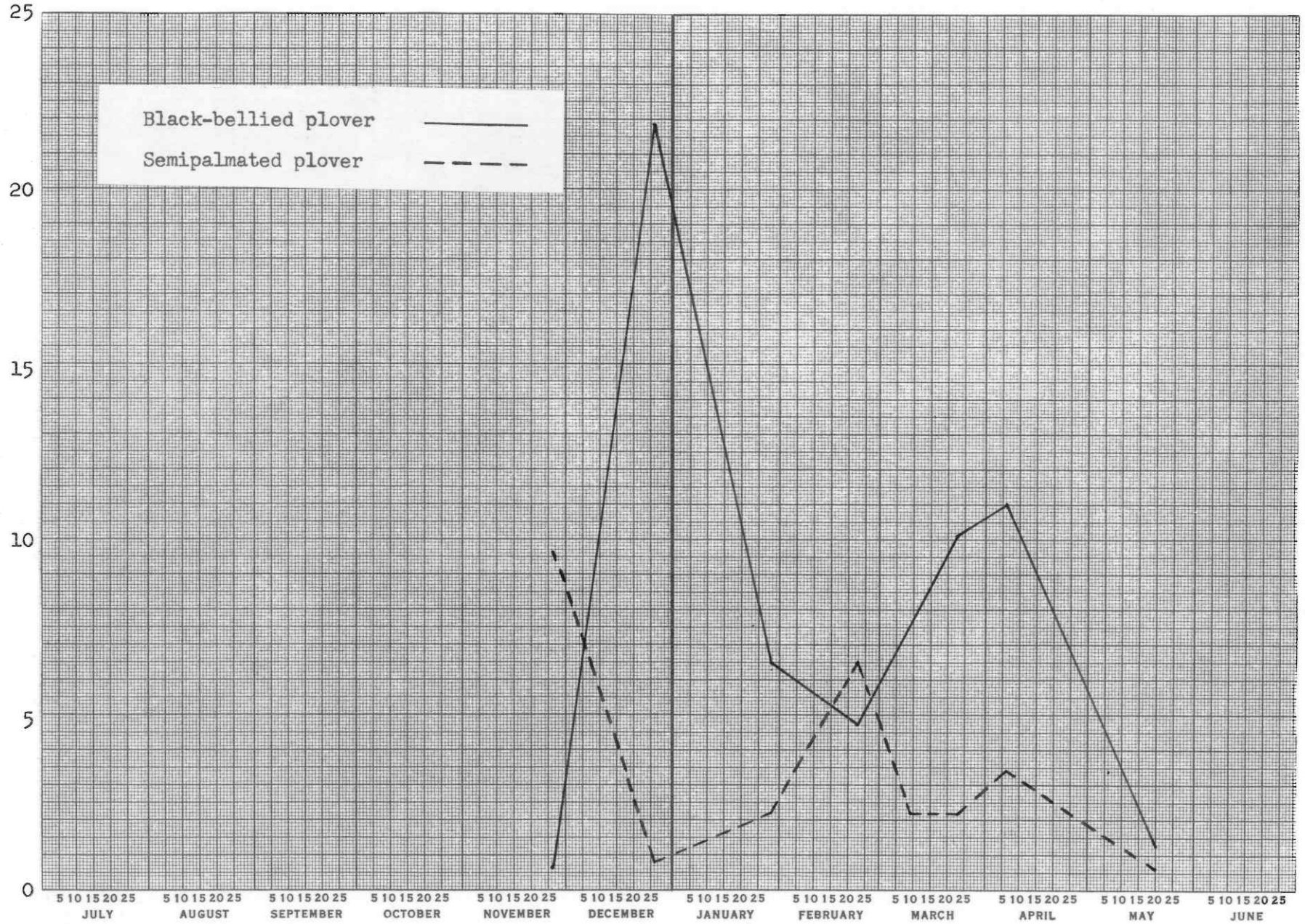


Figure 1. Monthly high counts of all shorebirds.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE ALAMEDA, SOUTH SHORE (3-1-1)



Scale ranges from 0 to 250 shorebirds.

Figure 2. Monthly high counts of black-bellied plovers and semipalmated plovers.

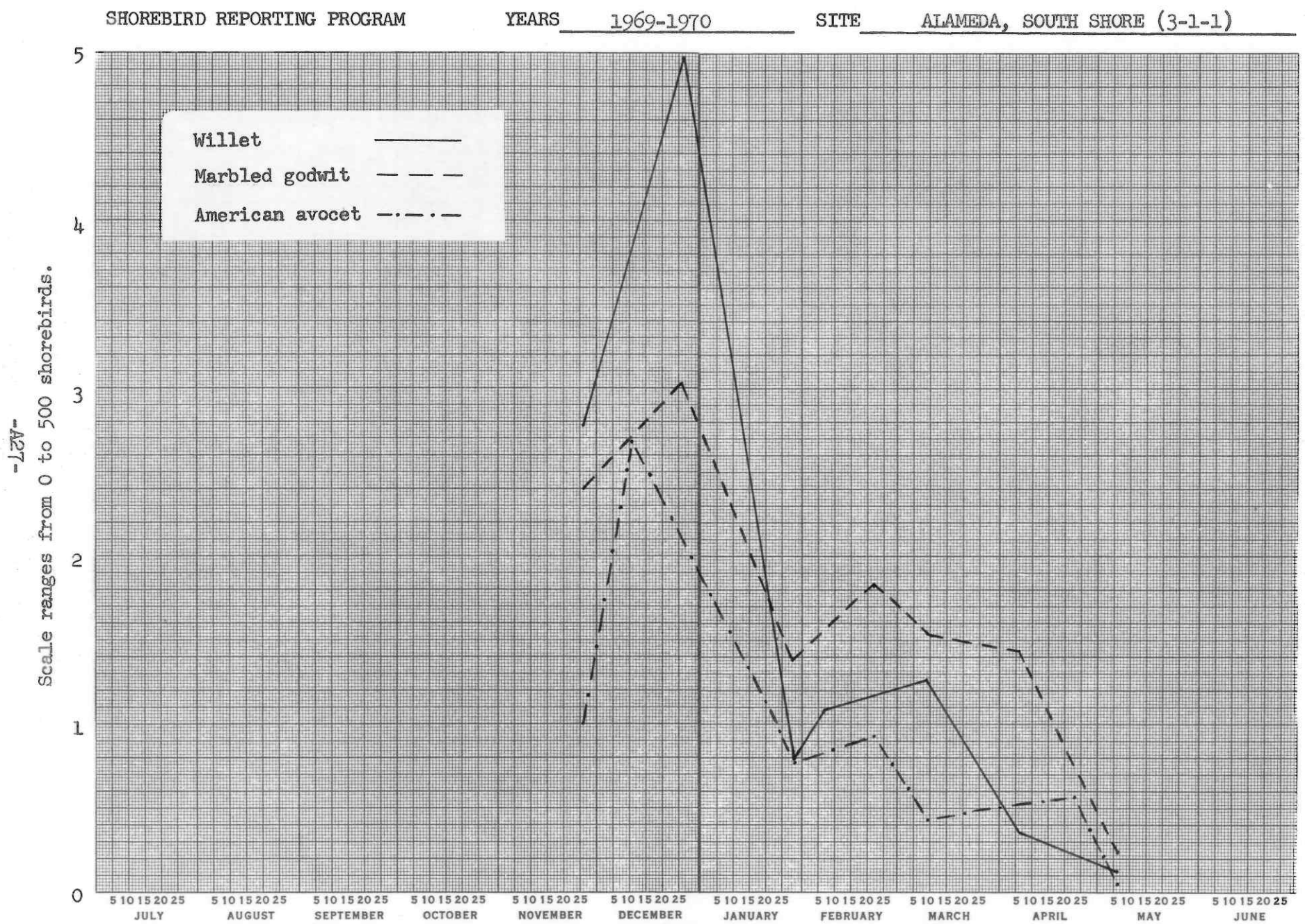


Figure 3. Monthly high counts of willets, marbled godwits, and American avocets.

CENSUS SITE: Palo Alto Marsh (S3-43-1)

LOCATION: East of the Palo Alto Airport in Santa Clara County at the south end of South San Francisco Bay.

DIRECTIONS FOR CONDUCTING CENSUS: In Palo Alto proceed northeast on Embarcadero Road to its end at the Baylands Nature Interpretive Center. Enroute, stop opposite the Sea Scout Marina. Count birds on the tidal marsh and lagoon. Continue on the road to the parking lot, census birds from catwalks and the dike along west end of marsh to the northeast boundary of airport.

OBSERVERS: Harriet Mundy, 757 Tennyson Avenue, Palo Alto 94303
C. Lester Sleeper, 861 Harvard Avenue, Menlo Park
Elizabeth A. Peterson, 1180 Harker, Palo Alto 94301
Edward R. Wagenhals, 10401 Creston Drive, Cupertino 95014
Bonnie Rapp, 644 Jay Street, Los Altos 94022

RESULTS: Twenty-three censuses were conducted between October 24, 1969 and May 22, 1970. Because counts were made during various tide levels, totals are misleading for some species.

Total Shorebird Numbers: Figure 1 summarizes the seasonal change in shorebird numbers during the reporting period. Greatest numbers were seen in April during the spring migration, and a smaller peak occurred in early February. The wintering numbers were lowest in December. Nearly all the shorebirds had left the marsh by the middle of May.

Plovers, Turnstones, and Surfbirds: Killdeer were fairly common throughout the reporting period, as shown in Figure 2. A maximum of 30 semipalmated plovers was counted on October 30. They remained fairly common in late fall and early winter. None were seen at the site from early January until late February. They were generally uncommon from March until the middle of May, when they were last seen.

Black-bellied plovers were generally rare in late fall and winter, although 12 were counted on one census in December. They were a common spring migrant until mid-May, and numbers increased to a peak of 152 on April 22 (Figure 2).

Up to 8 ruddy turnstones were seen on only two censuses in spring. No snowy plovers, black turnstones, or surfbirds were recorded.

Sandpipers: Small sandpiper species (least and western sandpipers and dunlins) were usually the most numerous shorebirds observed throughout the reporting period. More than 5,600 western sandpipers accounted for half of the peak number of

all shorebirds in late April. Dunlins and western sandpipers were abundant to very abundant throughout the reporting period until mid-May, when they were last seen. Dunlins were counted in greatest numbers in January. Least sandpipers were very common to abundant throughout the reporting period, and greatest numbers were seen from January through March. Ten sanderlings were seen only on the May 15 census.

Figure 3 summarizes the maximum counts for each month of willets, marbled godwits, and dowitchers. Willets were an abundant late fall and early winter migrant. They became very abundant during the winter months, when up to 2,000 were counted. They remained common throughout May. Marbled godwits were very common at times in fall and early winter, but numbers were quite low on some censuses. They were abundant in February and March, and peak numbers were counted on April 22. They were no longer present at the end of May.

Dowitchers, mostly the short-billed species, were very common to abundant in fall and early winter. A peak of 1,000 in December was followed by two larger peaks of about 2,500 each in early February and early April. They were not seen after mid-May.

Greater yellowlegs were uncommon in fall and winter and were not seen in spring. Long-billed curlews were fairly common in January; up to a maximum of 16 were counted. They were less common in February, and a few were seen in March and April. They were rarely seen in the fall months. Several whimbrels were seen only during January and May censuses.

Avocets and Stilts: Peaks of 440 American avocets were counted during October and January censuses. A low point was recorded in December. After the January peak, an irregular decline took place. None were present after the middle of May.

Black-necked stilts were generally uncommon in the fall and spring months, and only a few were seen on two occasions in winter. A maximum of 12 was counted on November 11.

Phalaropes: No Wilson's or red phalaropes were seen, and the only record of northern phalaropes was made on April 22, when 45 were counted.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE PALO ALTO MARSH (3-41-2)

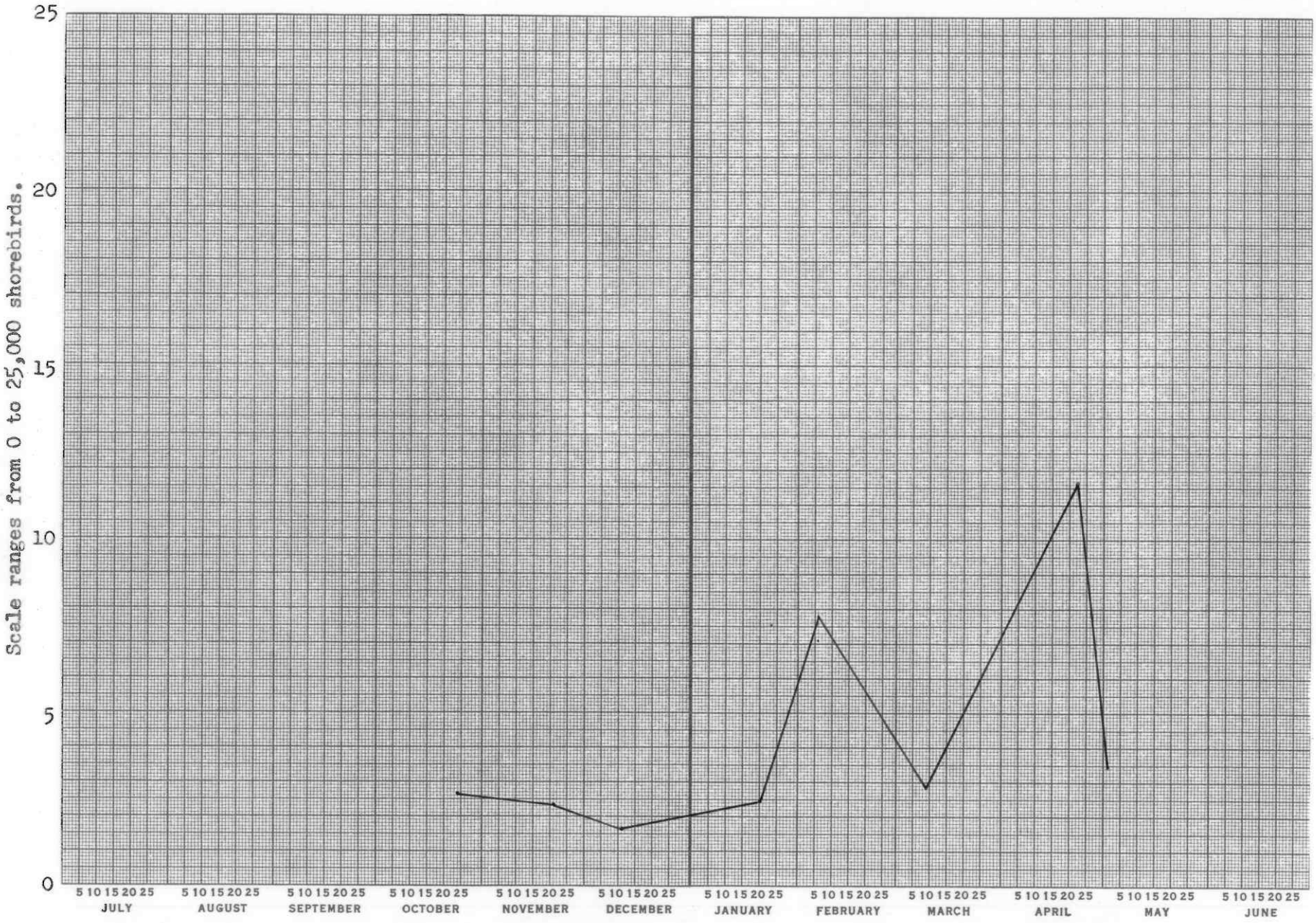


Figure 1. Monthly high counts of all shorebirds.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE PALO ALTO MARSH (3-41-2)

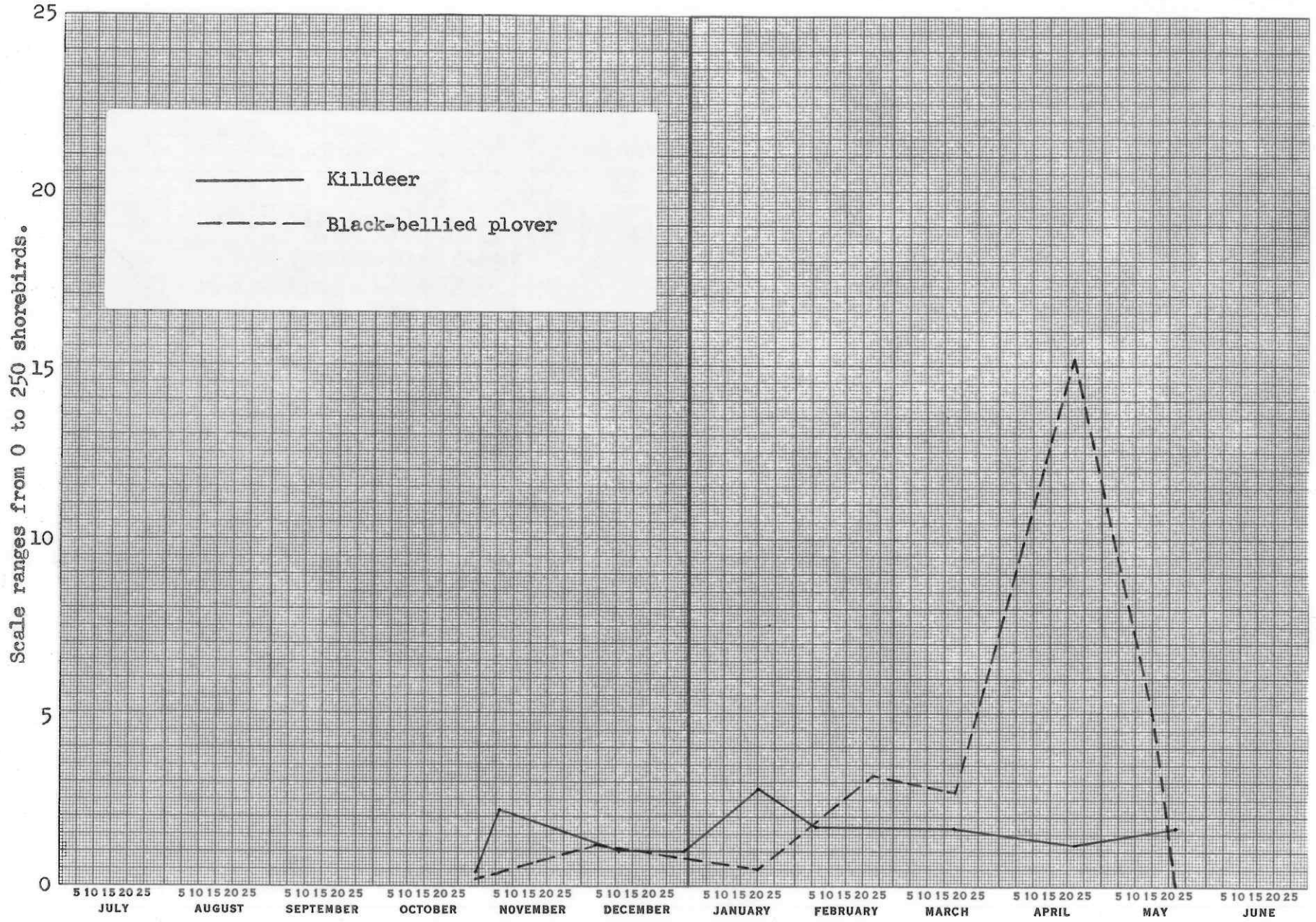


Figure 2. Monthly high counts of killdeer and black-bellied plovers.

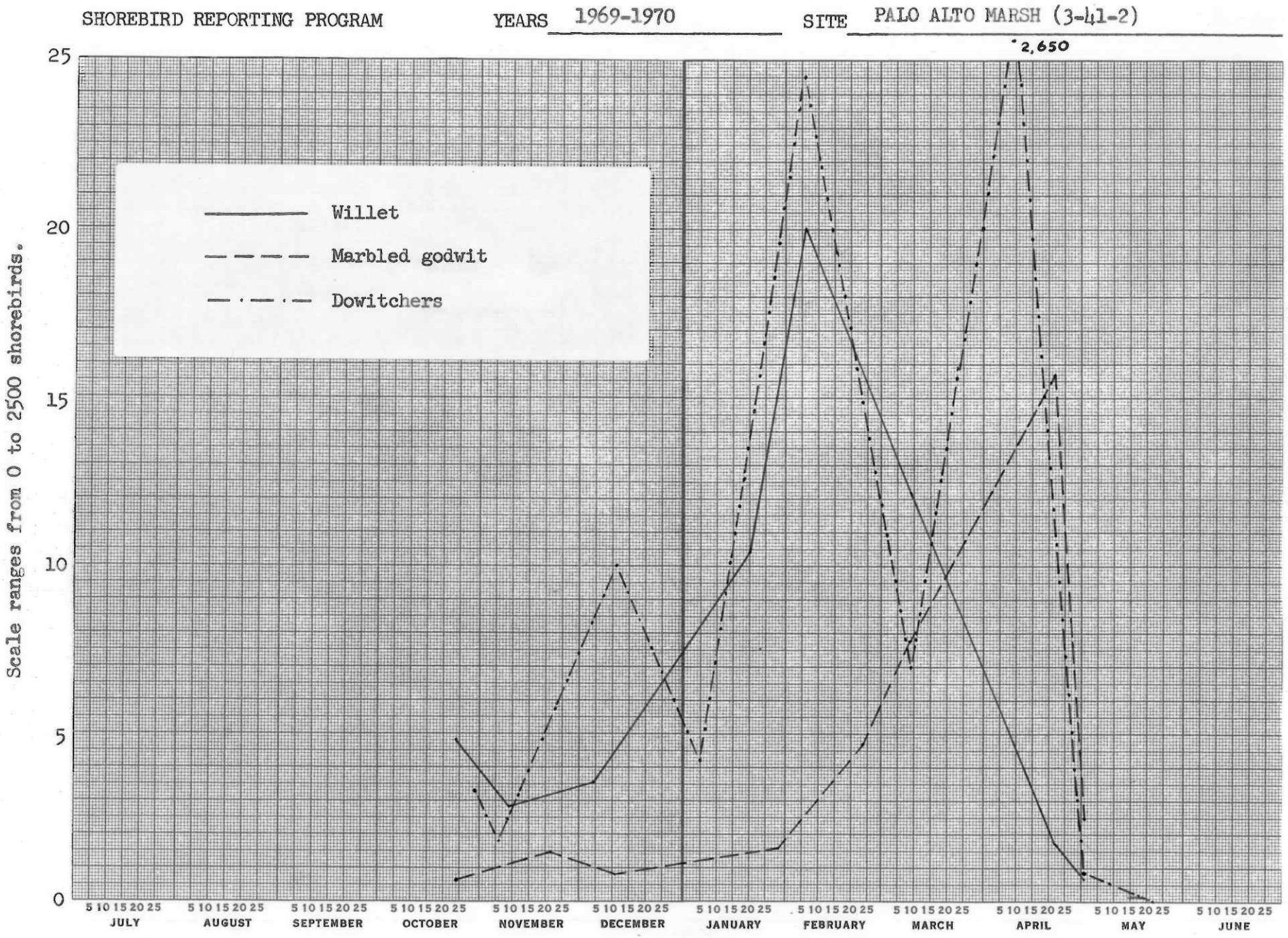


Figure 3. Monthly high counts of willets, marbled godwits, and dowitchers.

CENSUS SITE: Cuesta-By-The-Sea (S3-40-6)

LOCATION: South shore of Morro Bay, San Luis Obispo County

DIRECTIONS FOR CONDUCTING CENSUS: Not received.

OBSERVERS: Elinor B. Seelye, 2264 Del Norte, Los Osos 93401
Ruth Feiring, 1199 Green Oaks Drive, Los Osos 93401
Harriet Turk, 2364 Anne Avenue, Los Osos 93401

RESULTS: Twenty three censuses were conducted from November 3, 1969 to May 29, 1970. This mudflat census area yielded high numbers of shorebirds even during high tides.

Total Shorebird Numbers: As shown in Figure 1, shorebirds were abundant in fall and winter, and a noticeable increase occurred in January. A peak population of 4,115 was counted on April 23. Only 20 or 30 shorebirds were counted in late May.

Plovers, Turnstones and Surfbirds: Killdeer and black-bellied plovers were uncommon throughout the reporting period. From 3 to 10 snowy plovers were occasionally seen in fall and in January, but they were rare in spring. Semipalmated plovers occasionally were seen only in December and January, when a maximum of 20 was counted. Black and ruddy turnstones were rare and were seen only in November.

Sandpipers: The most numerous shorebirds were the small sandpipers species (dunlin, least, and western sandpipers). These were generally counted together as unidentified small sandpipers. Up to 12 sanderlings were occasionally recorded in the fall. Willets (Figure 2) were a common fall migrant, and a peak of 105 was counted in January. They were uncommon to fairly common during the remainder of the winter and fall censuses. As shown in Figure 2, marbled godwits were most abundant in November, December and April and were common in winter. From 1 to 5 long-billed curlews were usually seen throughout the reporting period.

Dowitchers (mostly short-billed) were occasionally reported in the fall; a maximum of 25 appeared on November 3. They were rare in winter and spring. Greater yellowlegs were rare in fall and absent from the area during winter and spring. Whimbrels were not reported.

Avocets and stilts: Avocets were rare. No black-necked stilts were seen.

Phalaropes: Northern phalaropes were occasionally seen in the fall. A maximum of 34 appeared on December 29. No Wilson's or red phalaropes were reported.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE MORRO BAY, CUESTA-BY-THE-SEA (3-40-6)

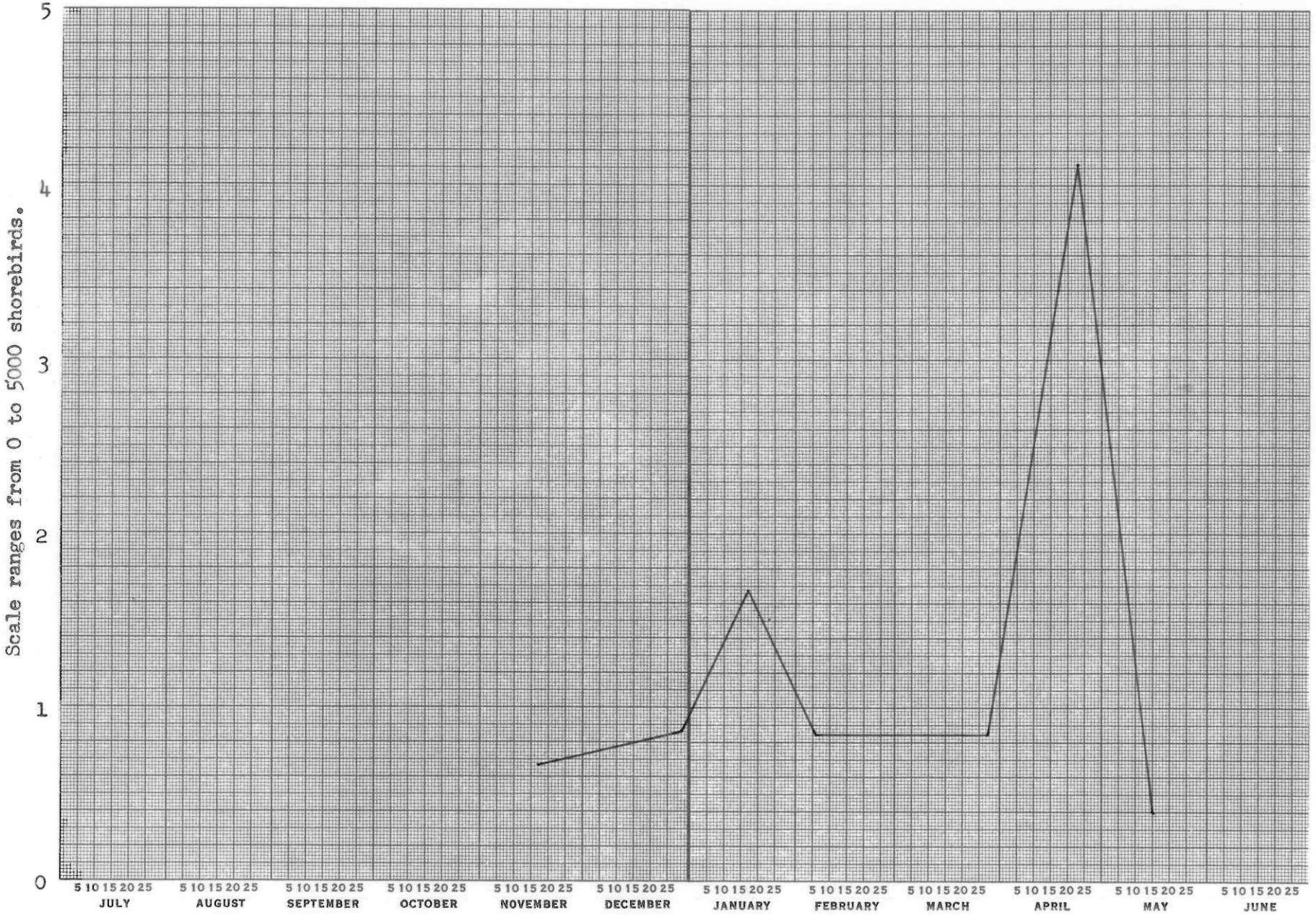


Figure 1. Monthly high counts of all shorebirds.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE MORRO BAY, CUESTA-BY-THE--SEA (3-40-6)

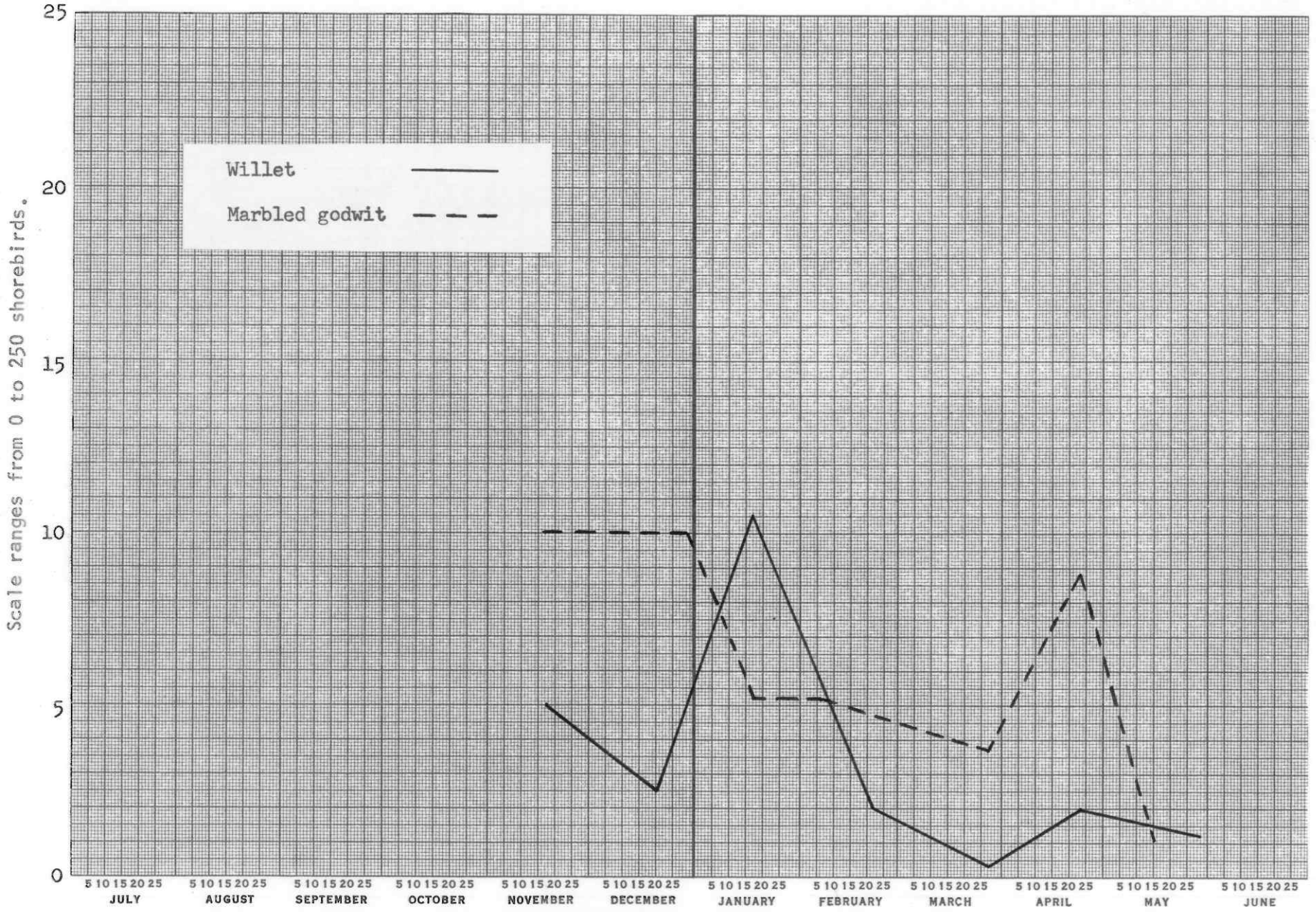


Figure 2. Monthly high counts of willets and marbled godwits.

CENSUS SITE: El Capitan Beach (S5-42-1)

LOCATION: Shoreline of El Capitan State Park, approximately 20 miles west of Santa Barbara, along Highway 101.

DIRECTIONS FOR CONDUCTING CENSUS: The route starts at the rocky point a few hundred yards southeast of the beach parking lot. The beach transect continues 0.9 miles west to some old pilings on the beach near a rocky outcropping. Count shorebirds observed on the bluff, beach, overhead, and on the water surface as far out as the waves break.

OBSERVERS: Charles and Alice Richardson, 736 N. Ontare Road, Santa Barbara 93105

RESULTS: Sixteen censuses were conducted between October 16, 1969 and May 7, 1970. Most censuses were conducted during low tides.

Total Shorebird Numbers: Numbers remained below 100 through fall and winter; lowest numbers were counted at the end of winter. This was followed by a substantial increase in the shorebird population with the influx of the spring migrants. The peak number (157) was counted in late April (Figure 1).

Plovers, Turnstones, and Surfbirds: Black-bellied plovers were present but uncommon on all censuses from October to early April. They were slightly more common in fall than in winter. Killdeer were also uncommon in the fall and early winter and were rarely seen after January. Snowy plovers were uncommon in late fall and early winter and were last seen on February 4.

Two semipalmated plovers and four surfbirds were observed only on April 27, and two black turnstones were seen only on December 24. No ruddy turnstones were recorded.

Sandpipers: Sanderlings were the most abundant shorebirds and were seen on all censuses during the reporting period. They were generally common, becoming very common at times. Numbers fluctuated greatly from census to census. A maximum of 94 sanderlings was counted on May 7 (Figure 1). Western sandpipers were seen only on two spring censuses. During the late April peak in total shorebird numbers, 92 western sandpipers accounted for the majority of shorebirds counted. However, on May 7 only 9 westerns were seen. From 2 to 6 least sandpipers were seen on a few censuses only in the fall.

Willets were fairly common throughout the reporting period. A maximum of 23 was counted in December (Figure 1). Two wandering tattlers were observed on only one census (May 7). Whimbrels were uncommon, but from 1 to 7 were present on nearly all censuses. Marbled godwits were also uncommon. Up to 4 were often recorded on the transect. From 1 to 4 spotted sandpipers were present on most of the censuses.

Sandpiper species not recorded at this site included the long-billed curlew, greater yellowlegs, dunlin, knot, and long-billed and short-billed dowitchers.

Avocets and stilts: No American avocets were observed. Black-necked stilts were reported only on the December 4 census, when 15 were flying overhead.

Phalaropes: No Wilson's or northern phalaropes were observed. Two red phalaropes were recorded on the transect only on November 19. On that date several more red phalaropes were observed far offshore.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE EL CAPITAN BEACH (5-42-1)

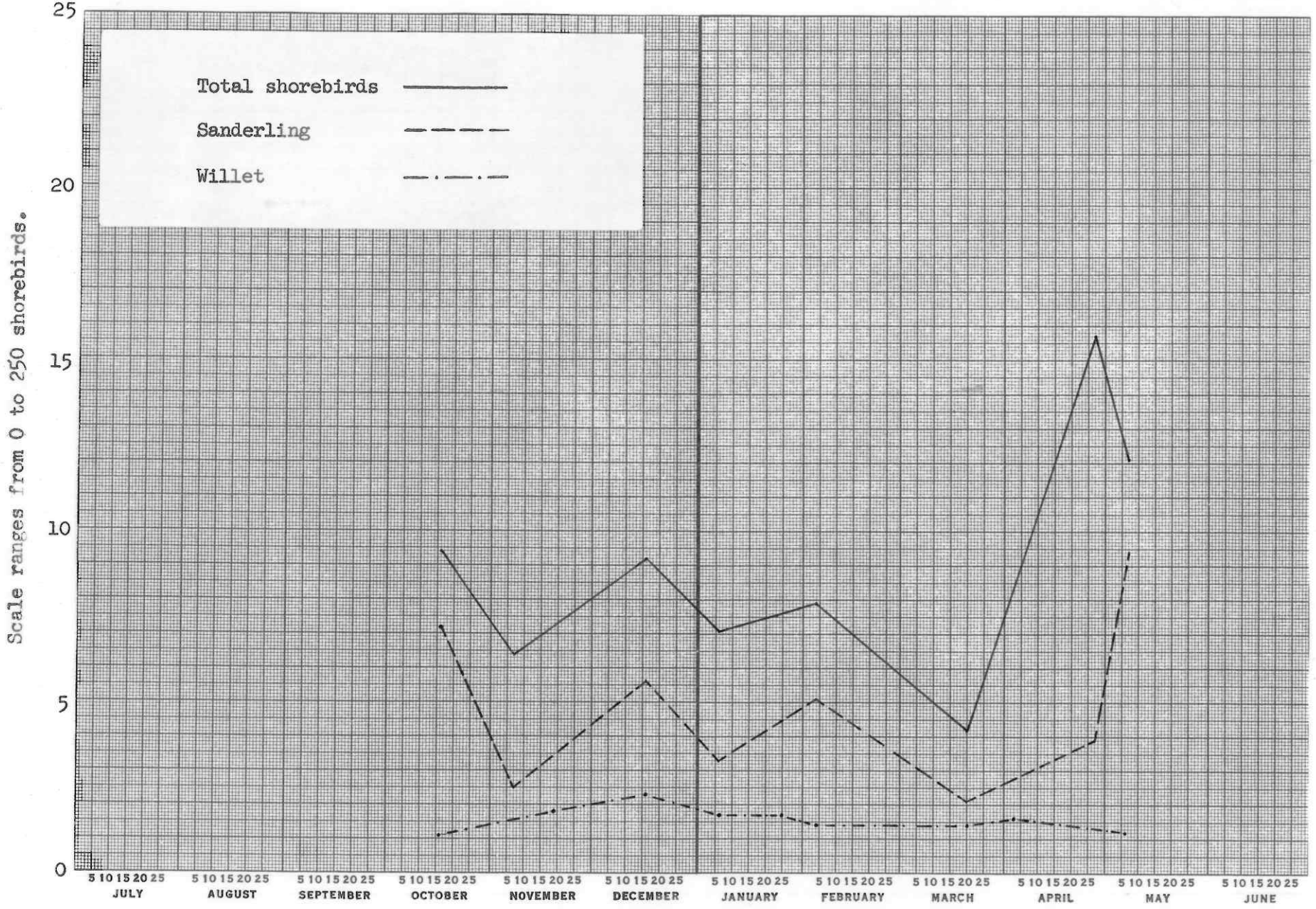


Figure 1. Monthly high counts of sanderlings, willets, and all shorebirds.

CENSUS SITE: Carpinteria Marsh (S5-42-3)

LOCATION: Immediately west of Carpinteria along the south coast of Santa Barbara County.

DIRECTIONS FOR CONDUCTING CENSUS: Census shorebirds in or flying above the marsh within the boundaries used in the Santa Barbara Channel oil spill wildlife monitoring program. The marsh is privately owned and permission for access is necessary.

OBSERVERS: Leslie C. Cook, 2119 De La Vina, Santa Barbara

RESULTS: Fifteen censuses were conducted between September 5, 1969 and March 3, 1970. All counts were made at low or nearly low tide.

Total Shorebird Numbers: Greatest numbers during the period of the census occurred in September (Figure 1). After a drop in numbers in October, there was an increase throughout the remainder of the fall. Numbers declined substantially during the winter censuses. The spring migration was not censused.

Plovers, Turnstones, and Surfbirds: As shown in Figure 2, black-bellied plovers were usually common throughout the reporting period. Peaks of nearly 50 were reached on November 28 and February 14. Killdeer were fairly common throughout the censusing period. A maximum of 23 was counted in mid-November.

Semipalmated plovers were common in September, when up to 31 were counted. They were generally uncommon throughout the remainder of the censusing period. Thirty semipalmated plovers were counted on the first census in September, although they were not seen in October. They were uncommon in November, when they were last seen.

Ten black turnstones were seen on only one census in mid-October, and no ruddy turnstones or surfbirds were recorded.

Sandpipers: Figure 1 illustrates the trend in numbers of three of the smaller sandpiper species (dunlin, least and western sandpipers). Dunlins were common until mid-February after a peak of 110 was reported on September 5. Least sandpipers were also most abundant on that date, when 300 were counted. Least sandpipers were generally very common throughout the remainder of the reporting period. Western sandpipers reached maximums of 350 on September 9 and December 4 and were very common on most other censuses. They were last counted on January 4.

Figure 2 shows changes in seasonal abundance of willets, marbled godwits, and dowitchers. Willets were common throughout the reporting period, up to a maximum of 47. None were present on the January census. Marbled godwits were fairly common in September and October. They were more abundant in November and December, when up to 48 were observed. None were seen in January, and they were generally uncommon during the remainder of the winter. The dowitchers were usually not distinguished to species, but all of the dowitchers (93) counted on one census in October were the long-billed species.

One to four long-billed curlews were often counted throughout reporting period. Occasionally, whimbrels were seen in the fall and winter, with most (13) counted on September 18; most sightings were of single individuals. Greater yellowlegs were uncommon in fall and were rarely seen in the winter. A single sanderling was seen on only one census in October. Spotted sandpipers were uncommon throughout the reporting period. One or a few were present on most censuses, although none were seen in December.

Avocets and Stilts: American avocets were rare during fall censuses. They were more numerous in the winter, and a maximum of 9 was counted on March 3. No black-necked stilts were observed.

Phalaropes: None were recorded.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE CARPINTERIA MARSH (5-42-3)

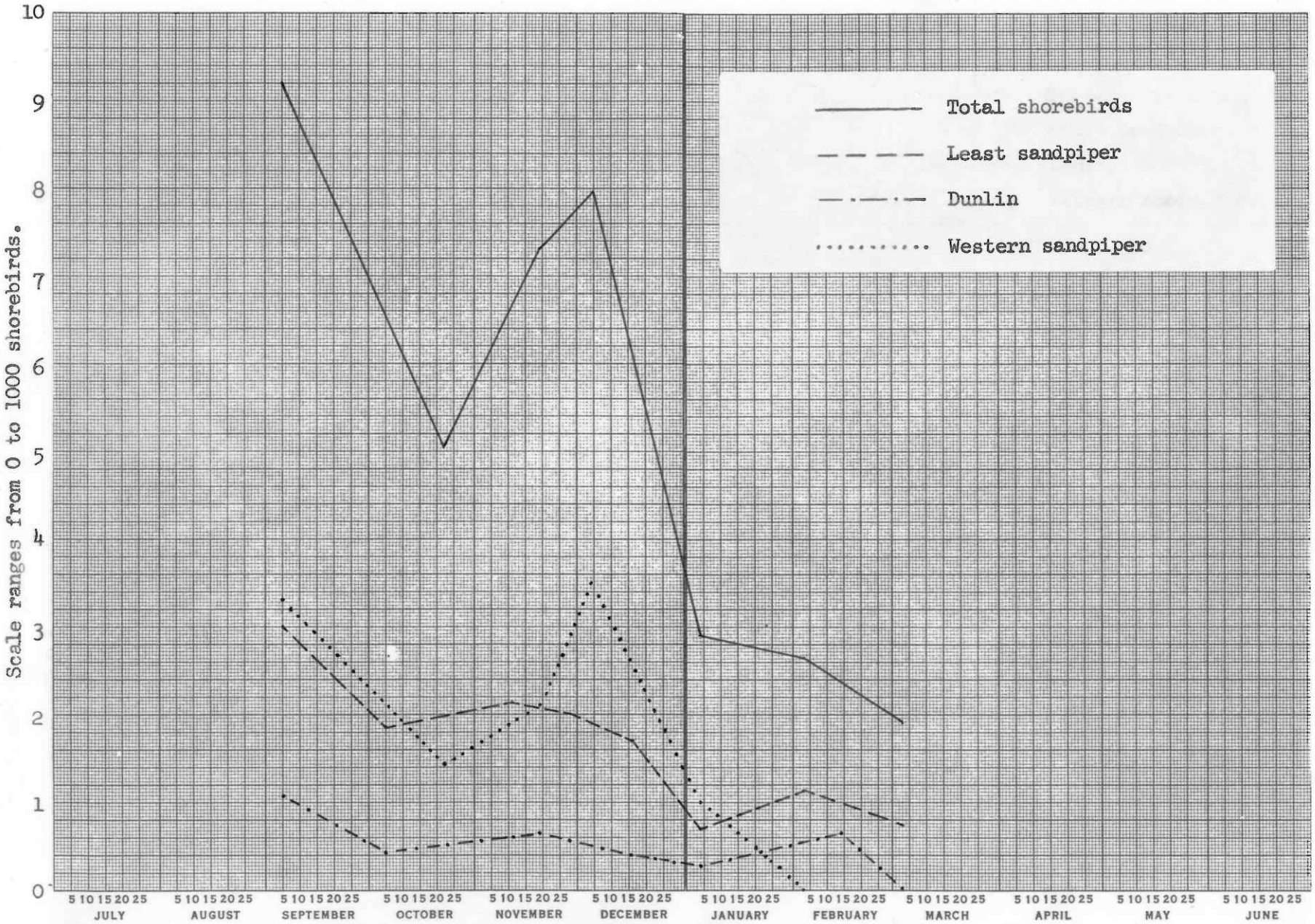


Figure 1. Monthly high counts of least sandpipers, dunlins, western sandpipers, and all shorebirds.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE CARPINTERIA MARSH (5-42-3)

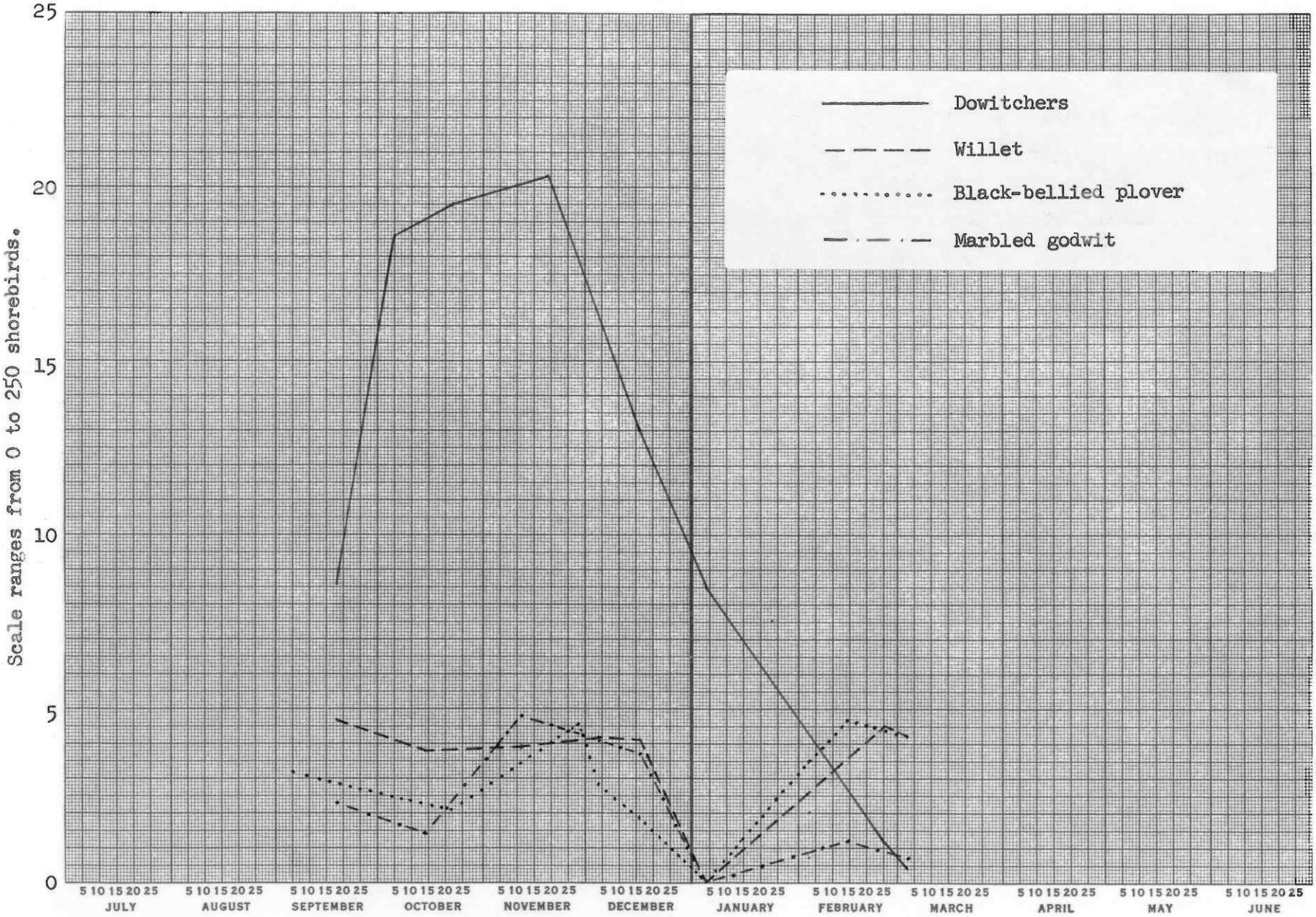


Figure 2. Monthly high counts of dowitchers, willets, black-bellied plovers, and marbled godwits.

CENSUS SITE: Palos Verdes Peninsula - Rocky Coastline (S5-19-1)

LOCATION: West shore of Palos Verdes Peninsula in southern Los Angeles County. From Palos Verdes Plaza, drive south on Palos Verdes Drive. Turn west on Yarmouth Road, then left on Paseo Del Mar to Lunada Bay. Follow any one of the foot trails from the top of the cliff to the shoreline.

DIRECTIONS FOR CONDUCTING CENSUS: Walk north and count shorebirds from Lunada Bay to Bluff Cove (Flat Rock Point). The two-mile transect along rocky shoreline takes from two to three hours to complete.

OBSERVERS: Richard and David Bradley, 2209 Via Pacheco, Palos Verdes Estates 90274
Rusty Scalf, 2145 Via Pacheco, Palos Verdes Estates 90274

RESULTS: Twenty-two censuses were conducted between November 2, 1969 and May 12, 1970. No counts were made in December, and only one was made in January. Tide levels do not appear to significantly affect shorebird numbers at this site.

Total Shorebird Numbers: Largest numbers of shorebirds occurred in the last week of November when large numbers of phalaropes were present. Nearly all of the more than 5,000 shorebirds seen on November 30 were phalaropes (species not identified). Monthly high counts of all shorebirds other than phalaropes are graphed in Figure 1. Excluding phalaropes, fewer than 100 shorebirds per census were counted on November censuses. Peaks of about 130 shorebirds were counted in early February, late March, and mid-April. After the April peak of 135, numbers declined throughout the remainder of the census period.

Oystercatchers: Two black oystercatchers were seen only on April 12.

Plovers, Turnstones and Surfbirds: Black-bellied plovers (Figure 1) were generally common from November through April. A peak of 72 was counted on February 1. Black turnstones were fairly common in November, March and April. A peak of 38 occurred on January 18, but they were uncommon in February. Surfbirds were first seen on March 18. More than 30 were present on censuses on March 29 and April 12. Few remained in late April.

No semipalmated plovers, snowy plovers, killdeer, or ruddy turnstones were reported.

Sandpipers: Willets (Figure 1) were fairly common in November, January, and April. Numbers fluctuated widely throughout most of winter. A maximum of 47 willets was recorded on March 22. Thirty-seven whimbrels were counted on November 2. After this

peak they were generally uncommon. A spring peak of 13 occurred on April 12. Sanderlings were present only in the last half of November, when up to 20 were counted.

Four western sandpipers were seen only on May 3, and one dowitcher (species not identified) was seen only on March 1. Marbled godwits were also rare and were seen only in early winter.

From 1 to 7 wandering tattlers were present on all censuses from November through early April. They were fairly common in late April and May, when up to 16 were counted. Spotted sandpipers were fairly common throughout the reporting period. Few remained in mid-May after a peak of 25 was counted on May 3.

No long-billed curlews, greater yellowlegs, lesser yellowlegs, knots, least sandpipers, or dunlins were observed.

Avocets and stilts: None were recorded.

Phalaropes: Northern and red phalaropes were observed offshore only during the latter half of November. More than 5,000 phalaropes (species not identified) were seen on November 30.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE PALOS VERDES PENINSULA (5-19-1)

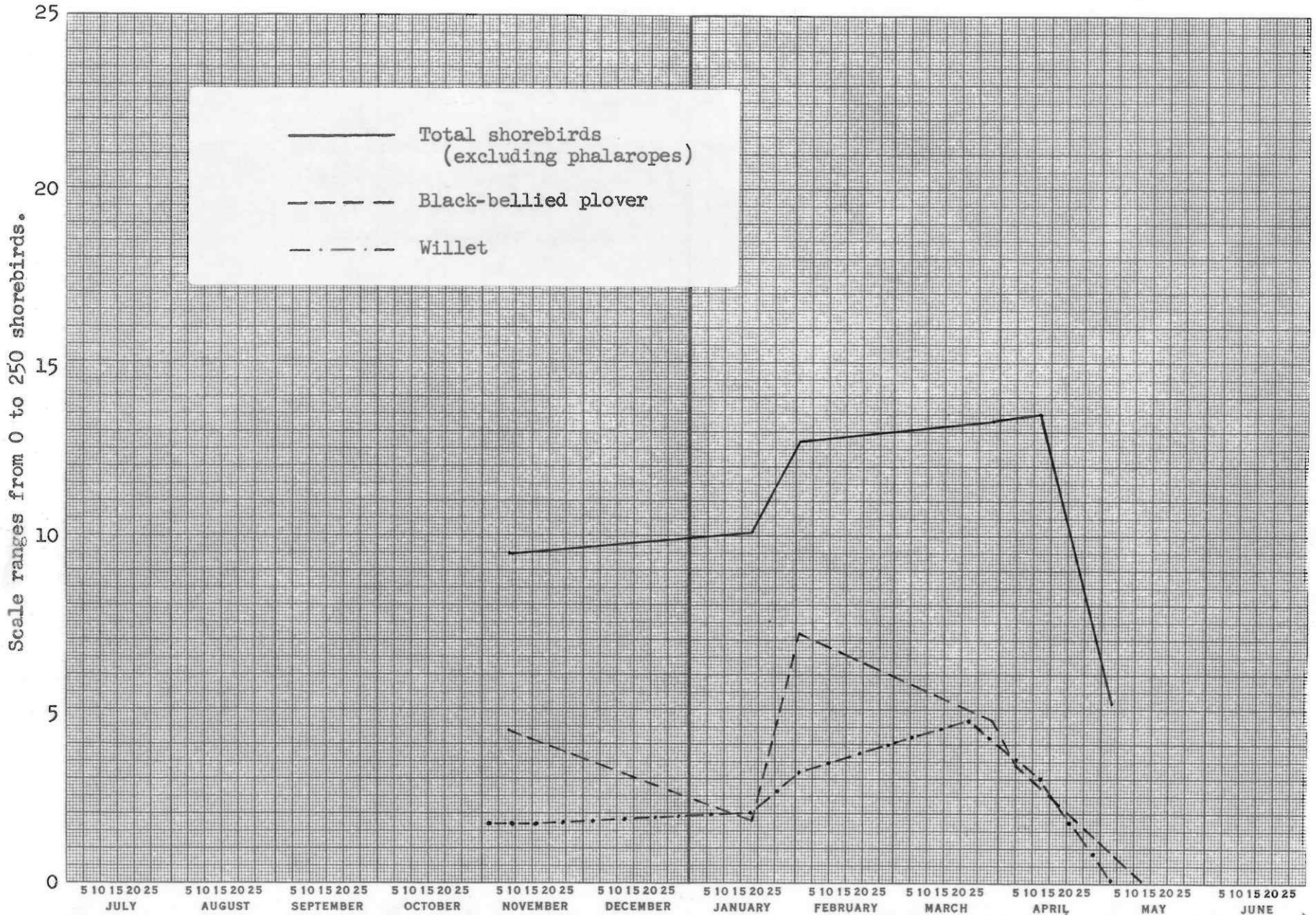


Figure 1. Monthly high counts of black-bellied plovers, willets, and total shorebirds (excluding phalaropes). No censuses were conducted in December.

CENSUS SITE: Upper Newport Bay (S5-30-2)

LOCATION: North end of Newport Bay near Newport Beach, Orange County

DIRECTIONS FOR CONDUCTING CENSUS: Censuses are conducted from Back Bay Road along the east shoreline of Upper Newport Bay. Shorebirds are censused as far away as species identification is possible between the old earthen dike and "The Narrows"--a distance of about one-half mile.

OBSERVERS: Robert L. Vernoy, 13252 19th Street, Chino 91710
Jack Spruill, 11735 Crystal Street, Chino 91710
Michael Bird, 12829 12th Street, Apt. 2, Chino 91710

RESULTS: Eighteen censuses were conducted between July 1, 1969 and May 8, 1970. Most counts were made during low tides, when large numbers of shorebirds were feeding on the mudflats.

Total Shorebird Numbers: The shorebird population in this area increased greatly during fall from relatively low summer numbers to a peak of 4,224 in early December (Figure 1). Shorebirds were still very abundant in January. More than 3,300 were seen late in that month. Numbers fell to below 2,000 during the remainder of winter, but again increased in April to about 3,500. The main spring migration was over by early May.

Plovers, Turnstones and Surfbirds: Black-bellied plovers were uncommon to fairly common in summer and early fall (Figure 2). Maximum numbers were seen in late fall and early winter, when up to 175 were counted. They were fairly common after January.

Eight semipalmated plovers were seen on only one occasion in fall, but 68 were counted in late January. They were an uncommon spring migrant.

Snowy plovers were rare, although 15 were recorded on one census in mid-winter. Killdeer were rare in summer and not seen during fall censuses. Several occasionally were seen during winter, and they were an uncommon spring migrant.

Three ruddy turnstones were seen only on April 21. No black turnstones or surfbirds were recorded. One golden plover was seen only on April 21.

Sandpipers: Small sandpiper species were usually the most numerous shorebirds seen. These included dunlins, least and western sandpipers, but these species were not usually distinguished on the reporting forms. When species could be recognized, western sandpipers were most numerous. Much lower numbers of dunlins and least sandpipers were recorded. Peaks of about 3,500 small sandpipers were counted in December and April.

As shown in Figure 1, long-billed dowitchers were most numerous in January, when up to 800 were counted. They were very common to abundant from November through May. Short-billed dowitchers were recorded only in May.

Marbled godwits, as shown in Figure 2, were common in summer but less common in early fall. Larger numbers were seen in late fall and they became very common to abundant in early winter, when up to 312 were counted. Numbers progressively declined through late winter and early spring; no spring peak was recorded. The willet population increase in late fall and reached a peak in January (Figure 2). Thereafter, numbers steadily decreased, and few remained in May.

Long-billed curlews were uncommon in summer and were occasionally seen in fall. They were regularly observed in winter, when up to 20 were counted. Only one was recorded in early spring. Forty-five whimbrels were counted on January 19. A few were present on several other early winter censuses, but they were a rare spring migrant.

Greater yellowlegs were a rare fall migrant. Eighteen were counted on January 19, the last date they were recorded. Lesser yellowlegs were a rare fall migrant. Twenty-seven Baird's sandpipers were reported only on April 6. Knots and spotted sandpipers were rare spring migrants, and no sanderlings were reported.

Avocets and stilts: Fifty American avocets were present on July 1. They were not seen again until late fall, when up to 61 were counted. Maximum numbers (up to 323) were counted in January and February. Avocets were still very common in March, but they were uncommon in spring (Figure 2). Up to 6 black-necked stilts were seen during censuses in summer and early winter.

Phalaropes: None were reported.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE UPPER NEWPORT BAY (5-30-2)

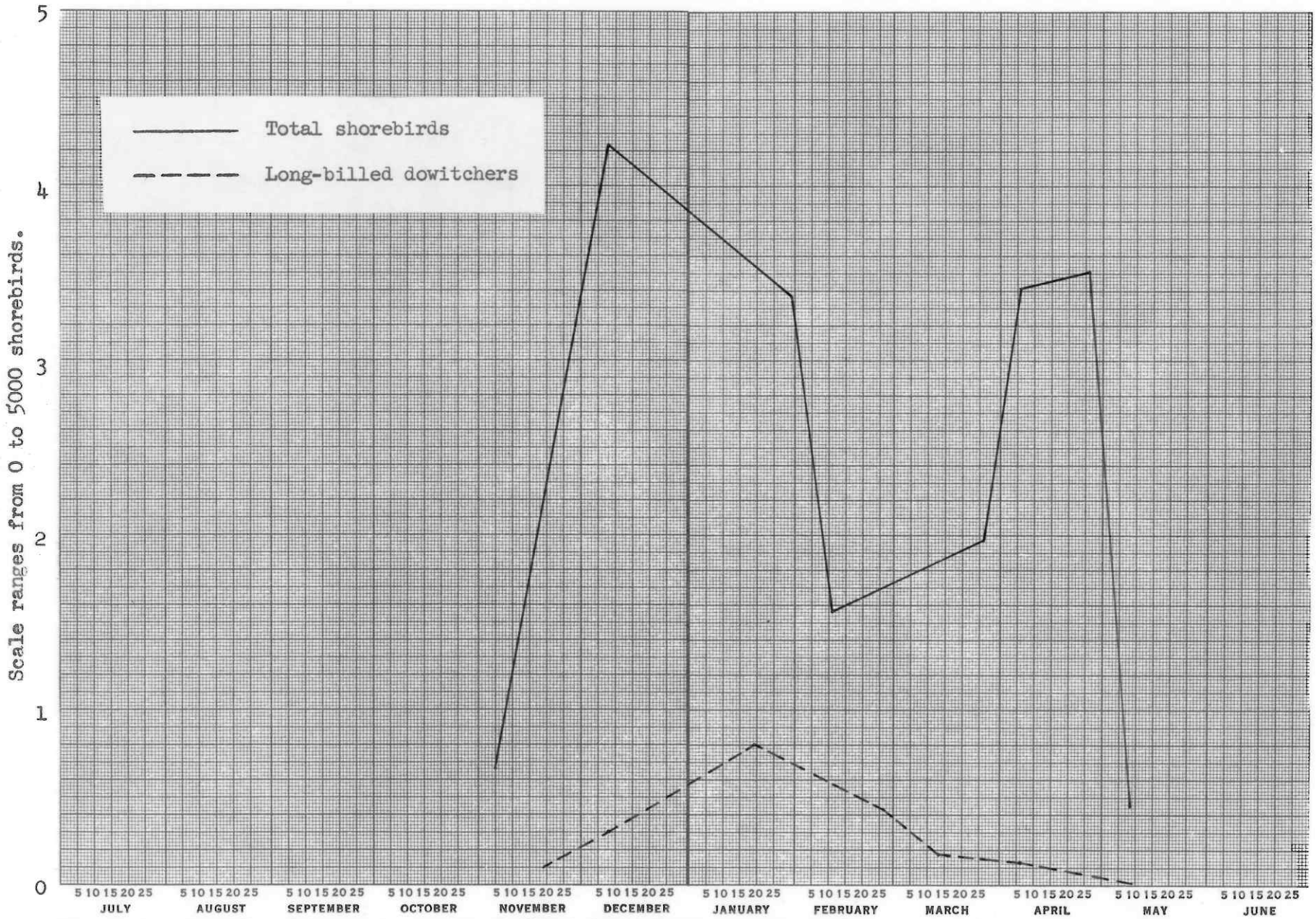


Figure 1. Monthly high counts of long-billed dowitchers and all shorebirds.

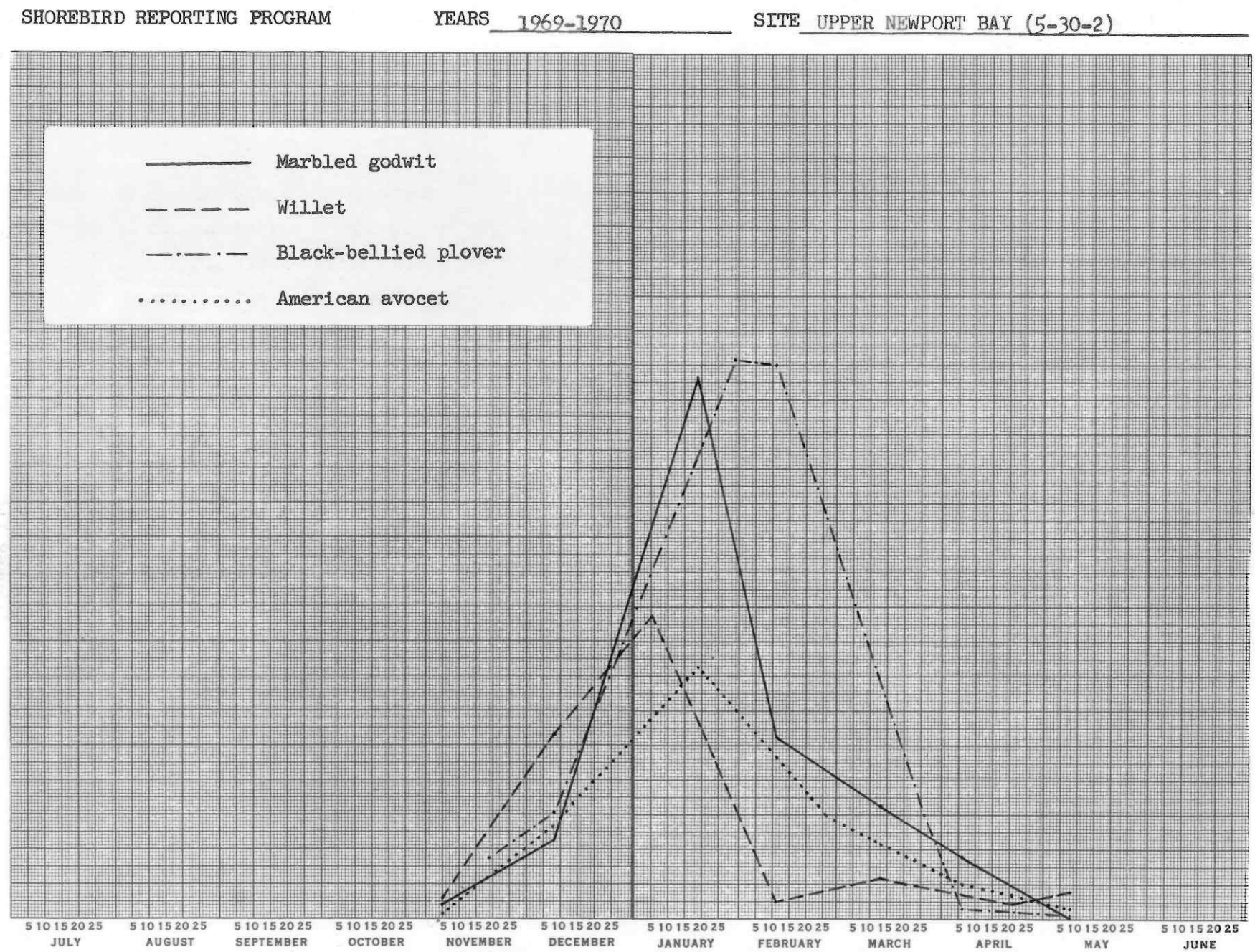


Figure 2. Monthly high counts of marbled godwits, willets, black-bellied plovers, and American avocets.

CENSUS SITE: South San Diego Bay salt evaporating ponds (S5-37-1)

LOCATION: South end of San Diego Bay on Western Salt Company property.

DIRECTIONS FOR CONDUCTING CENSUS: Census birds resting during high tide on ponds #3 and #20 at the foot of 13th Street north of Imperial Beach.

OBSERVER: Alan Craig, 712 Tarento Drive, San Diego 92106
Ron LeValley, 4417 Hazelwood Avenue, Sacramento

RESULTS: Twenty-one censuses were conducted between October 19, 1969 and June 30, 1970. Censuses generally were made at high tide when large numbers of shorebirds used the salt ponds to feed and rest.

Total Shorebird Numbers: As shown in Figure 1, the greatest number of shorebirds were counted at this site on the first census, when 4,000 shorebirds were seen. The population declined to less than 1,400 by January. Numbers remained below 2,000 until April, when a second peak of 2,251 shorebirds was observed. Numbers declined sharply in May, but early fall migrants increased the total to nearly 1,000 at the end of June.

Plovers, Turnstones, and Surfbirds: Black-bellied plovers were common to very common in the fall and winter (Figure 2). Peaks of 200 were recorded in January and February. They were still common in April but became uncommon during the remainder of spring.

As many as 9 snowy plovers were recorded in October, but throughout the remainder of the reporting period they were uncommon. They are known to breed in this area. Killdeer were not seen in the fall. They first appeared on January 22, when 30 were counted. Thereafter, they were uncommon and none were seen in June.

One or two semipalmated plovers were seen only from late February through April. Ruddy turnstones were observed on only two occasions--18 on February 27, and 4 on March 25. No black turnstones or surfbirds were reported.

Sandpipers: Western sandpipers were the most abundant shorebirds in south San Diego Bay (Figure 1). They were most abundant (2,300) in October and remained abundant through April, when another peak (1,200) occurred. Few remained by the end of May. The first fall migrants were seen at the end of June.

Dunlins were most abundant on the October 19 census when 550 were counted. They were very common during winter; a small peak of 200 occurred in mid-February. No spring peak was noticed, and all dunlins were gone from the area by the end of May (Figure 1).

A few least sandpipers were seen in October, and none were recorded in November. They were common from December through April but were not seen after this.

Figure 3 shows the seasonal occurrence of willets, short-billed dowitchers, and marbled godwits at the salt ponds. After a peak of 435 willets was counted on the first census, this species declined somewhat in numbers, but they remained very common until May. Small peaks of 200 occurred in February and April. Up to 50 remained in May, and the early fall migrants had arrived by late June.

As many as 47 dowitchers were recorded in early fall, but the species was not distinguished by the observer. No dowitchers were seen on two censuses in late November, but the short-billed species was common in December. They became more abundant during winter, reaching peaks of 200 in March and April. Only a few remained by June.

Marbled godwits were common to very common throughout the reporting period. The maximum number (250) was counted in April, and a smaller peak occurred in December (185) and late June (175).

Greater yellowlegs were uncommon but occurred on at least one census each month except May. One or two lesser yellowlegs were occasionally seen in early fall and late winter. Sanderlings were occasionally observed but were uncommon. Most were seen in late fall, and they were last seen in April. Whimbrels were seen on only two occasions--four on March 14, and 30 on June 30. No long-billed curlews were observed, and only one spotted sandpiper was recorded (May 16).

From 20 to 50 knots were occasionally seen during fall and January censuses. None were seen again until late April, when a peak of 100 was counted. Forty were still present in mid-May, but they were not seen again until five were counted on June 30.

Avocets and stilts: Figure 2 shows the seasonal occurrence of American avocets and black-necked stilts at the census site. Avocets were generally very common from October through April. Maximum numbers were recorded in October, and a small peak occurred in March. None were recorded in May, but several avocets were again present in June.

Black-necked stilts were also very common and were more abundant than avocets. Greatest numbers were counted in early fall (145) and late February (160). Lowest numbers were counted in May, followed by an increase in late June. They breed in this area.

Phalaropes: Northern phalaropes were abundant in October, reaching a peak of 250. They were uncommon later in the fall, but up to 40 were seen on winter censuses. They were common in April, but none were seen again until June 30, when 200 were reported.

Wilson's phalaropes were not observed until early spring, when up to 30 were seen. None were seen in late May, but they were abundant in June, when up to 400 were counted.

Red phalaropes were seen only between mid-November and mid-December. A maximum of 850 was recorded on November 16.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE SAN DIEGO BAY SALT PONDS (5-37-1)

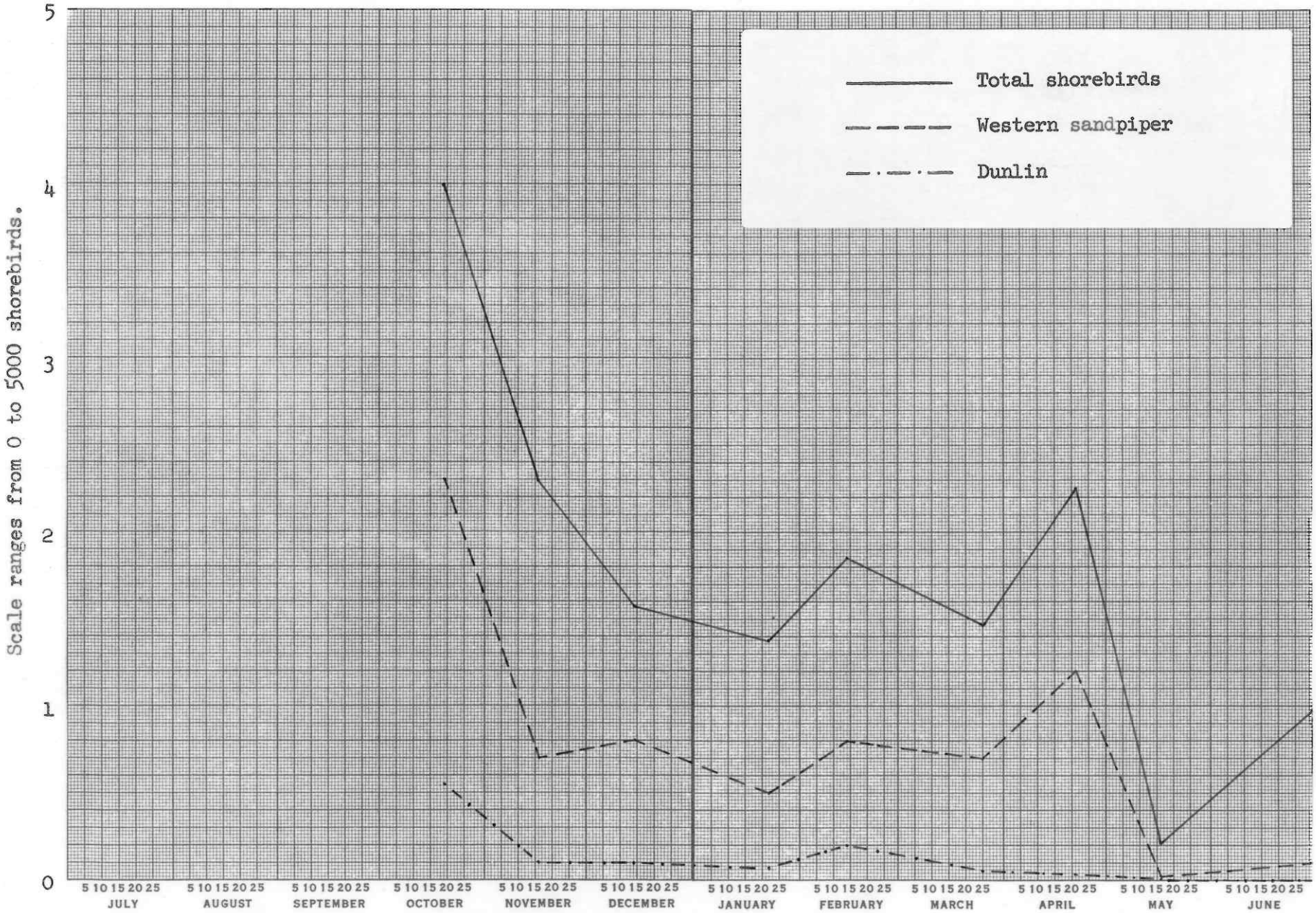


Figure 1. Monthly high counts of western sandpipers, dunlins, and all shorebirds.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE SAN DIEGO BAY, SALT PONDS (5-37-1)

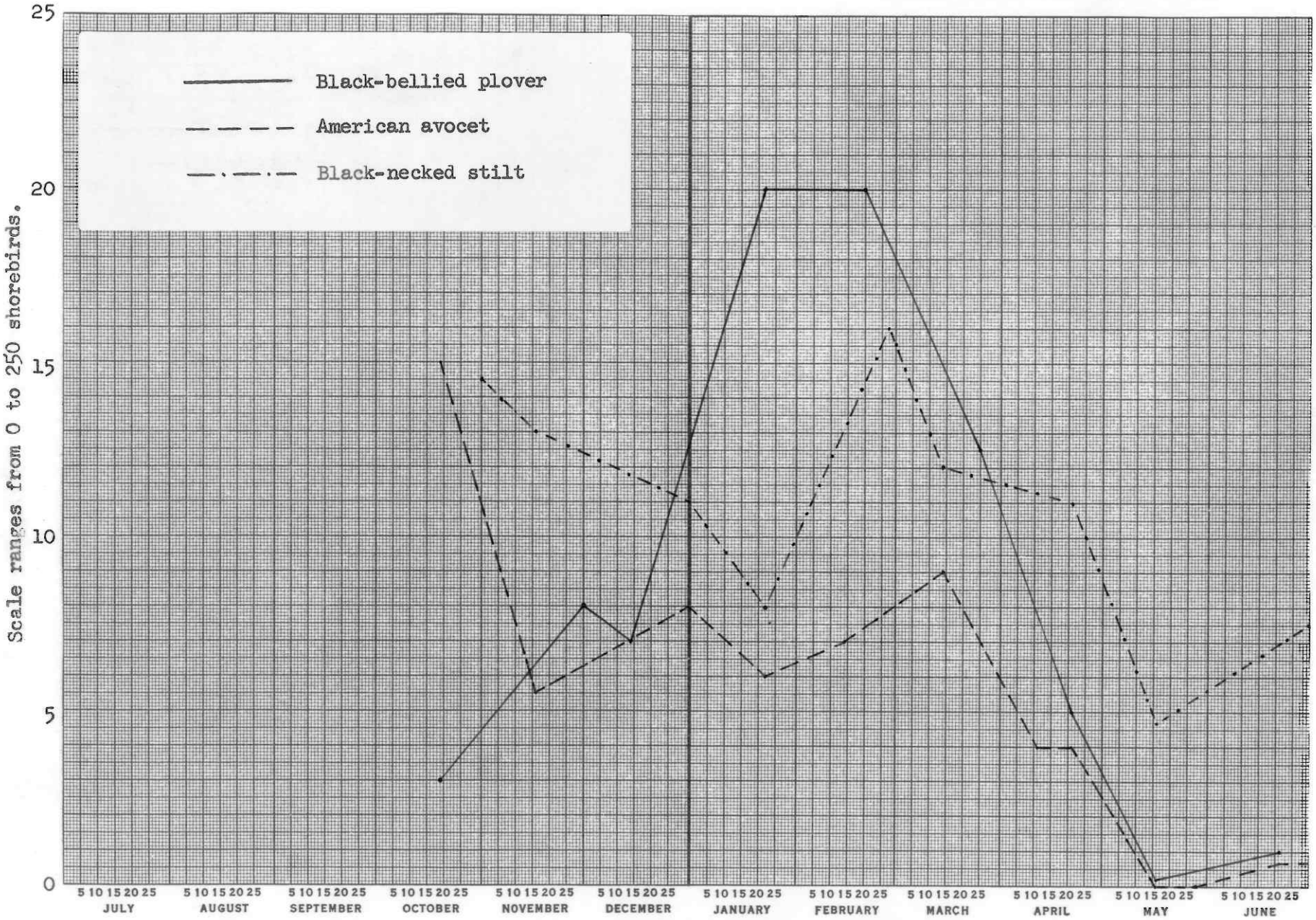


Figure 2. Monthly high counts of black-bellied plovers, American avocets, and black-necked stilts.

SHOREBIRD REPORTING PROGRAM YEARS 1969-1970 SITE SAN DIEGO BAY, SALT PONDS (5-37-1)

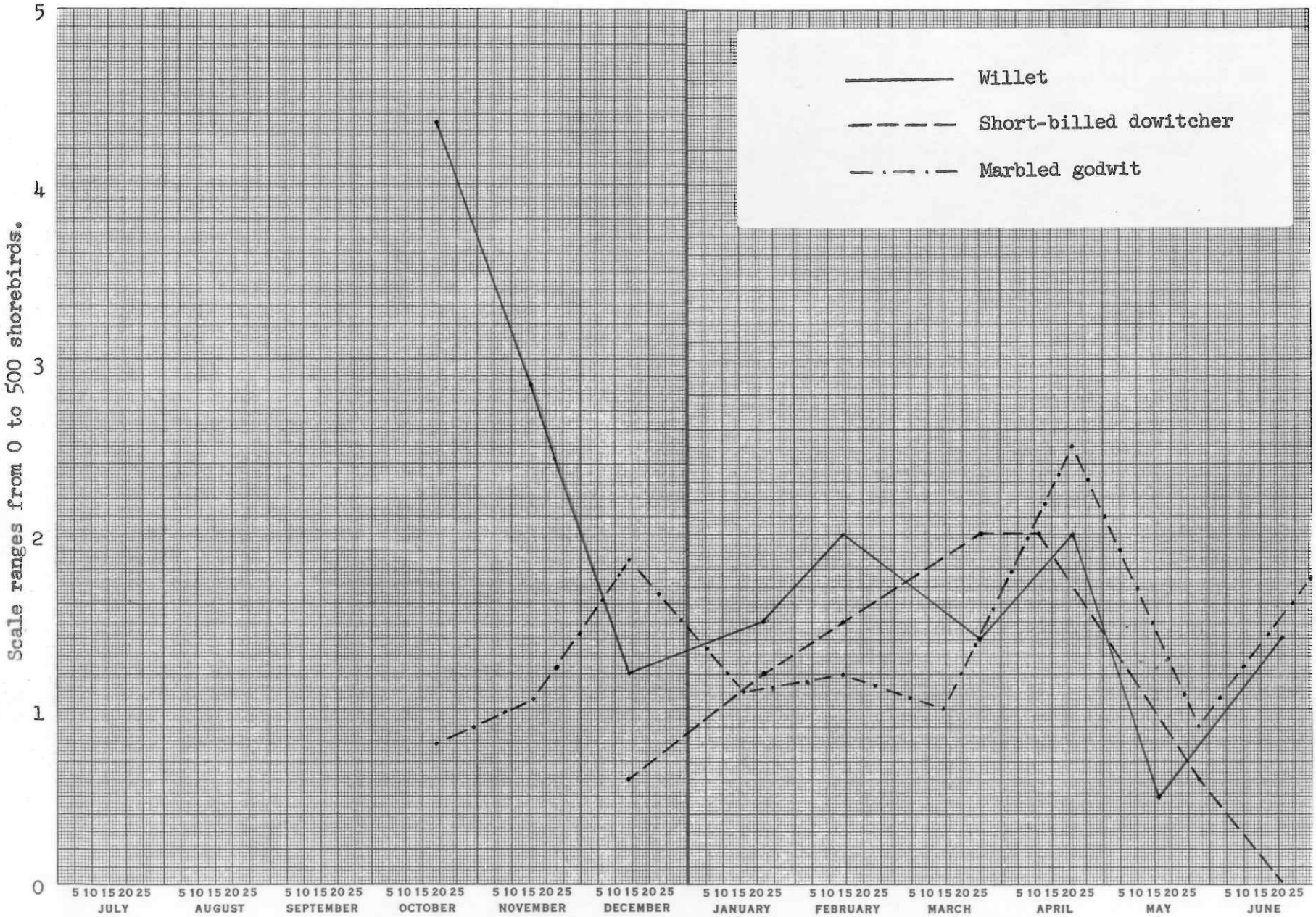


Figure 3. Monthly high counts of willets, short-billed dowitchers, and marbled godwits.

APPENDIX B

Census sites listed below were inadequately censused for various reasons. Discussions are not provided with graphs of seasonal abundance of shorebirds.

CENSUS SITE: Gillespie Ranch (S1-12-1)

LOCATION: South shore of Humboldt Bay. Drive south from Eureka on Highway 101 and turn west on Hookton Road. Turn right on Phelan Road and proceed through the wooden gate at the end of the paved road. Follow the dirt road to the left to the marked census area.

DIRECTIONS FOR CONDUCTING CENSUS: Count shorebirds present on the mudflat and marsh within an approximately 200 yard radius of the observation site.

OBSERVERS: Percy G. Hollister, 1941 3rd, Eureka 95501
Nevin D. Holmberg, 1543 F Street, Eureka 95501

RESULTS: Ten censuses were conducted; seven of these were conducted in the fall between September 23 and November 25, 1969. Three additional counts were made on March 21, May 4 and June 16, 1970. Censuses were made at various tide levels. The birds were too far away at very low tides to adequately distinguish many species, and no birds were present during one census when the mudflats were not exposed.

The greatest number of shorebirds was counted on March 21, when more than 1,500 were present; most of these were small sandpipers. Small sandpiper species generally were the most abundant shorebirds observed at the site on all censuses.

During the fall censuses, up to 70 willets and up to 35 marbled godwits were counted. Dowitchers (species not identified) were seen only in late November, when as many as 37 were observed. Small sandpiper species included dunlins and western sandpipers; no least sandpipers were recorded. Whimbrels were observed only on November 19, when 140 were counted. Killdeer were uncommon, and snowy plovers, black-bellied plovers, knots, and red phalaropes were rare fall migrants.

On the March and April censuses, small sandpipers were abundant, but other shorebird species were uncommon. These included only snowy and black-bellied plovers, willets and marbled godwits. No shorebirds were present on the June census, when the mudflat was not exposed.

Species not recorded at this site included semipalmated plover, ruddy turnstone, black turnstone, surfbird, long-billed curlew, greater yellowlegs, least sandpiper, sanderling, American avocet, black-necked stilt, northern phalarope and Wilson's phalarope.

CENSUS SITE: South Spit, Sand Beach (S1-12-2)

LOCATION: West side of sand spit in South Humboldt Bay. Drive south from Eureka on Highway 101 and turn west on Hookton Road to Table Bluff Beach. Proceed 0.6 miles north to a stump marked with a tan "X", along the west side of the road.

DIRECTIONS FOR CONDUCTING CENSUS: From the marked stump, walk directly west and begin censusing shorebirds along the beach. Count shorebirds seen on the beach, immediately offshore, or flying overhead. Walk north as far as the former location of the Brant Club building.

OBSERVERS: Ron H. Gerstenberg, 455 Laurel Drive, Dinuba
Nevin D. Holmberg, 1543 F Street, Eureka 95501
Charles D. Selden, 2374 Meadow Lane, Eureka 95501

RESULTS: Thirteen censuses were conducted between September 29, 1969 and May 4, 1970. No counts were made in December and April. Four transects were made in the winter months; no shorebirds were seen on three of these, probably because of poor weather conditions and disturbance by dune buggies during the censuses. Censuses may be conducted at any tide level, but counts should not be made when the wind speed is greater than about 10 miles per hour.

Total Shorebird Numbers: Sanderlings were usually the most numerous shorebird species seen and were, at times, the only shorebird present on the transect. Usually fewer than 70 shorebirds were seen, but large numbers occurred on October 25 (602), November 29 (157), and January 17 (555). All of the birds counted on the January 17 census were sanderlings.

Plovers, Turnstones, and Surfbirds: Plovers were seen only in the fall. Killdeer and semipalmated plovers were rare and up to five snowy plovers were occasionally seen. 102 black-bellied plovers were seen only on October 25. No ruddy turnstones, black turnstones, or surfbirds were observed. A single golden plover was recorded only on September 29.

Sandpipers: This site is most valuable as a station to monitor numbers of sanderlings. Sanderlings were generally common to very common during all censuses except the three winter counts, as described earlier. A maximum of 555 was recorded on January 17. A smaller peak of 170 occurred on October 25.

Least sandpipers were seen on only two censuses--320 on October 25 and 75 on November 7. Up to 20 western sandpipers were also seen on these two days, and 15 were counted on May 4. In early fall, whimbrels and willets were uncommon and dowitchers (species not indicated) and marbled godwits were rare. A single whimbrel was also present on May 4.

No dunlins, greater yellowlegs, long-billed curlews, or knots were recorded.

Avocets and stilts: None were recorded.

Phalaropes: No Wilson's or northern phalaropes were seen. Several red phalaropes were recorded on October 29 and November 7.

CENSUS SITE: South Spit, Mudflat (S1-12-3)

LOCATION: East side of sand spit in South Humboldt Bay. Drive south from Eureka on Highway 101. Turn west on Hookton Road to Table Bluff Beach. Drive along the spit to the former location of the duck club, and park in the turn-out on the east side (designated by a stake marked with an "X").

DIRECTIONS FOR CONDUCTING CENSUS: Census shorebirds on the mudflats as far away from the observation point as species identification is possible.

OBSERVERS: Nevin D. Holberg, 1543 F Street, Eureka 95501
Ron H. Gerstenberg, 455 Laurel Drive, Dinuba
Charles D. Selden, 2374 Meadow Lane, Eureka 95501
John and Deyea Harper, Route 1, Box 909, Eureka 95501
Jeph Shryer, 1935 H Street, Arcata 95521

RESULTS: Fifteen censuses were conducted between August 29, 1969 and June 16, 1970. No counts were made in April. Most censuses were conducted during low tide.

Total Shorebird Numbers: From a low count of only 10 shorebirds on August 29, the shorebird population increased to a maximum fall total of 297 on November 2. On December 22--the only December census--33 shorebirds were seen, possibly because of poor weather and tide conditions. Numbers increased with each census in winter to a peak of 817 on March 21. Because only one census was made during March and none was made in April, the peak numbers during the spring migration may not have been included. Shorebird numbers had declined greatly by early May. None were seen in mid-June, possibly because the mudflat was not exposed.

Plovers, Turnstones and Surfbirds: Semipalmated plovers were generally uncommon from late August to January 11. A maximum of 8 was seen on one census in November. They were not present during most of winter, and 13 were seen again on the May 4 census. One snowy plover was seen on each census from August 29 to October 5. Three were observed again on January 11. Black-bellied plovers were uncommon in the fall. None were seen in January, but a peak of 33 was counted on March 21. No killdeer, black turnstones, ruddy turnstones or surfbirds were observed at this site.

Sandpipers: Least and western sandpipers were the most common shorebirds in September and October. A peak of 600 western sandpipers was counted on February 14. Dunlins were first recorded on October 5 and became very common in early November, when 150 were seen. Sanderlings were uncommon and were seen only in early fall.

Marbled godwits were uncommon in fall. They became common in mid-winter, when up to 36 were seen. Five were present on May 4. Dowitchers were rare in fall and early winter. Seven

hundred were seen, however, on March 21. A few were present in early May. Willets were uncommon in fall, but up to 41 were counted during the winter.

No long-billed curlews, whimbrels, greater yellowlegs, lesser yellowlegs or knots were reported.

Avocets and stilts: No American avocets or black-necked stilts were reported.

Phalaropes: A single red phalarope was reported in November. No Wilson's or northern phalaropes were seen.

CENSUS SITE: McDaniel Slough (S1-12-4)

LOCATION: South of Arcata in North Humboldt Bay (Arcata Bay) west of the landfill dump.

DIRECTIONS FOR CONDUCTING CENSUS: This site no longer exists; the area is now being developed for a small boat harbor. Shorebirds were censused on the mudflat near the dike west of the landfill dump.

OBSERVERS: Nevin D. Holmberg, 1543 F Street, Eureka 95501
Ron H. Gerstenberg, 455 Laurel Drive, Dinuba
Jeph Shryer, 1935 H Street, Arcata 95521

RESULTS: Six censuses were conducted from September 1 to October 31, 1969. Four additional counts were made between January 31 and March 25. Most censuses were made at low tide when most birds were present.

Total Shorebird Numbers: Shorebirds were abundant in September and October; a peak of 939 was counted in early September. The late January census, even at low tide, yielded only 66 shorebirds. Numbers increased in March and another peak of 1,154 was counted on March 22.

Plovers, Turnstones, and Surfbirds: Black-bellied plovers were common to very common in September and October. A peak of 200 was counted on October 31. They were uncommon in winter. Killdeer were generally rare, although 17 were present on March 25. Two semipalmated plovers were recorded only on September 1. Snowy plovers, ruddy turnstones, and surfbirds were not recorded at this site.

Sandpipers: Small sandpiper species (dunlin, least, and western sandpipers) were the most numerous shorebirds observed. In September western sandpipers were abundant, and least sandpipers were common to abundant. Small sandpipers (species not distinguished) were abundant in October and common in January and February. Seven hundred dunlins and 300 western sandpipers accounted for most shorebirds counted on the March 22 census.

Marbled godwits were common in September but uncommon in October. They were more numerous in winter, when up to 99 were counted (March 22). Forty-five short-billed dowitchers were recorded on September 1. Few dowitchers (species not indicated) were seen during the remainder of the fall censuses, and none were present in the winter census.

Willets were uncommon in September and October. They were recorded only on one other census, when 51 were counted on March 22. Long-billed curlews were uncommon in September, the only month they were seen. Greater yellowlegs were seen only on two censuses in fall, when up to 8 were counted.

Fifty-six common snipes were seen only on September 24. Sanderlings, whimbrels and knots were not recorded.

Avocets and stilts: One or two American Avocets were occasionally seen, and black-necked stilts were not recorded during the reporting period.

Phalaropes: None were observed.

CENSUS SITE: Emmerson's Mill (S1-12-5)

LOCATION: North shore of Humboldt Bay. Drive west from Arcata on Samoa Road to Emmerson's Mill. Walk to the bay along the west levee of Mad River Slough.

DIRECTIONS FOR CONDUCTING CENSUS: Census shorebirds on the mudflat as far away as species identification is possible.

OBSERVERS: Thomas A. Reed, 898 A Union Street, Arcata 95521
Donald E. Schmodt, 1166 Olympia Street, Arcata 95521

RESULTS: Five censuses were conducted from October 19, 1969 to January 1, 1970. Two additional censuses were made on March 19 and April 18, 1970.

Total Shorebird Numbers: During good weather and tide conditions, 108 to 160 shorebirds were counted on fall censuses. Numbers increased in late winter and reached a peak of 667 on April 18.

Plovers, Turnstones, and Surfbirds: Killdeer and black-bellied plovers were uncommon during the fall. Black-bellied plovers, however, became very common in March and April. A peak of 180 was counted on March 19.

Up to 10 black turnstones were counted in November and December. No semipalmated plovers, snowy plovers, ruddy turnstones or surfbirds were seen. A single American golden plover was observed on November 18.

Sandpipers: Small sandpiper species (dunlin, least and western sandpipers) were the most numerous shorebirds. Least sandpipers were recorded only in the fall, when up to 36 were seen. Dunlins reached a peak fall population of 62 on November 18 and a peak spring population of 159 on April 18. Western sandpipers were generally common throughout the reporting period.

Willets were uncommon on the fall censuses, but more than 50 were counted on April 18. Similarly, only 10 to 20 marbled godwits were counted during fall censuses, but nearly 200 were present on the two censuses in March and April.

Dowitchers were rare in fall, but 209 were seen on April 18. Long-billed curlews, whimbrels, greater yellowlegs and knots were rare. No sanderlings or lesser yellowlegs were seen.

Avocets and Stilts: One American avocet was seen only on December 22, and no black-necked stilts were recorded.

Phalaropes: Northern phalaropes were uncommon in December. No Wilson's or red phalaropes were reported.

CENSUS SITE: Suisun Marsh, Joice Island (S3-48-1)

LOCATION: Suisun Waterfowl Refuge, Solano County. Drive three miles east of Fairfield on State Highway 12 to the county road marked "Grizzly Island Wildlife Area." Turn south and go three miles to Joice Island Wildlife Area entrance.

DIRECTIONS FOR CONDUCTING CENSUS: The census route begins as the observer crosses the entrance bridge onto Joice Island. The route continues west on the gravel road to Suisun Slough then south for 1/8 mile to the end of the gravel road.

OBSERVER: Rolf E. Mall, P. O. Box 368, Suisun City

RESULTS: Four censuses were conducted in late summer between August 20 and September 15, 1969. All counts were made at high tide. Rising water levels in the ponds during the two September censuses resulted in a considerable reduction of exposed mudflats with a subsequent drastic decrease in the numbers of shorebirds seen.

Total Shorebird Numbers: The two August censuses yielded counts of 264 and 520 shorebirds, but only 68 shorebirds were counted on each of the September counts. The decrease resulted mainly from the disappearance of least and western sandpipers after the ponds were flooded.

Plovers, Turnstones, and Surfbirds: Killdeer were common but decreased in number when the water level raised; up to 51 were counted in August. Two black-bellied plovers were observed on only one census. No other plovers or turnstones were reported.

Sandpipers: Least and western sandpipers, counted together, were the most numerous shorebirds observed. Up to 221 were seen in the August census, although few remained after the water level raised. One hundred and seventy-nine dowitchers (species not indicated) were recorded on only one census in August. Up to 33 greater yellowlegs were reported. Long-billed curlews and willets were fairly common in August but were not seen after the ponds flooded. However, up to 7 common snipes and 19 marbled godwits appeared in September.

Avocets and Stilts: Black-necked stilts were fairly common in August, but fewer were seen after the water level raised. Few American avocets were seen in August, but 12 were seen on one September census.

Phalaropes: Up to 10 northern phalaropes appeared in September when the ponds were flooded. No other phalaropes were observed.

CENSUS SITE: San Francisco Bay, Emeryville Crescent (S3-1-2)

LOCATION: East end of San Francisco - Oakland Bay Bridge along the east shore of San Francisco Bay, Alameda County. Take the Oakland Army Base exit from the east approach to the toll plaza, and immediately turn left onto the dirt road. Park near the radio station, and walk across the marsh to the inlet near the Bay Bridge Rod and Gun Club.

DIRECTIONS FOR CONDUCTING CENSUS: Census the small bay and mudflat northeast of the gun club.

OBSERVER: Sylvia J. Hope, 935 Folger Street, Berkeley

RESULTS: Eight censuses were conducted between September 21, 1969 and March 22, 1970. No censuses were made in the three month period between November 30 and February 28. Most counts were made during intermediate tide levels, although some of the highest populations were recorded during high tides. Most birds were counted on the mudflats during low and intermediate tides. At high tides more birds were seen on the sandy areas.

Total Shorebird Numbers: Greatest numbers of shorebirds (5,138) were counted on November 16; most of these were dunlins (3,000) and western sandpipers (1,800). A smaller peak of more than 1,500 shorebirds was recorded on March 22. Shorebirds were generally abundant during all other censuses.

Plovers, Turnstones, and Surfbirds: Black-bellied plovers were regularly seen throughout the reporting period. Most, up to 32, were seen in early fall and in March. From 1 to 10 killdeer were usually present, and semipalmated plovers were seen only in mid-fall, when they were common.

During the fall migration, from 4 to 12 black turnstones were often seen, but ruddy turnstones were rare. No snowy plovers or surfbirds were reported.

Sandpipers: Dunlins were first recorded on October 12, and they became most abundant in November. Western sandpipers were also most numerous in November. On most censuses the small sandpiper species (least and western sandpipers, and, possibly dunlins) were counted together.

Willets were very common throughout the reporting period; a peak of 166 was recorded in mid-November. Dowitchers were common to very common fall migrants. Marbled godwits were generally uncommon, although up to 27 were occasionally counted in the fall.

A few greater yellowlegs were occasionally reported during fall censuses; 20 more were seen on March 7. Up to 11 long-billed curlews were seen regularly in October and November, but they were rare in winter. One whimbrel was reported only on the March 22 census.

Avocets and Stilts: American avocets were very common in early fall. They were generally common during the other censuses. No black-necked stilts were recorded.

Phalaropes: None were reported.

CENSUS SITE: Ravenswood Slough (S3-41-1)

LOCATION: West shore of South San Francisco Bay near Redwood City, San Mateo County.

DIRECTIONS FOR CONDUCTING CENSUS: Censuses were conducted in a diked salt evaporation pond near the KGO radio station. Counts were made of shorebirds feeding or resting in this area, especially on a long, submerged mudflat in the pond.

OBSERVERS: A. E. Montgomery, 2270 Summit Drive, Hillsborough 94010
Katherine Kroll, Millbrae
Mark Zumsteg, (no address given)

RESULTS: Only three censuses were conducted at this site between November 29 and December 30, 1969. The water level was raised in the censused salt ponds in January, 1970, and no shorebirds were seen on January 17, when censuses were discontinued.

Total Shorebird Numbers: Shorebirds were abundant during all three censuses; from 453 to 990 were counted.

Plovers, Turnstones and Surfbirds: Black-bellied plovers were common on November 29 and December 9, but none were seen on the last census. Only one snowy plover was recorded. Semipalmated plover, killdeer, turnstones, and surfbirds were not reported.

Sandpipers: Dunlins and western sandpipers were very common. A maximum of only 14 least sandpipers was recorded. Willets were very common to abundant, and only two greater yellowlegs were seen.

Species not recorded include the long-billed curlew, whimbrel, short-billed and long-billed dowitcher, sanderling, and marbled godwit.

Avocets and Stilts: Up to 313 American avocets were recorded, but seven black-necked stilts appeared on only one census.

Phalaropes: None were reported.

CENSUS SITE: Palo Alto Flood Basin (S3-43-2)

LOCATION: West shore of South San Francisco Bay at Palo Alto. The two small ponds are located along the east side of the frontage road along Highway 101 immediately southeast of the Palo Alto Municipal Services Center.

DIRECTIONS FOR CONDUCTING CENSUS: From the frontage road census shorebirds in the area of the ponds.

OBSERVERS: Harriet Mundy, 757 Tennyson Avenue, Palo Alto 94303
Charles L. Sleeper, 861 Harbard Avenue, Menlo Park
Elizabeth A. Peterson, 1180 Harker, Palo Alto
E. R. Wagenhals, 10401 Creston Drive, Cupertino 95014

RESULTS: Seven censuses were conducted in late fall and winter between November 21, 1969 and February 6, 1970. In addition, three censuses in February and March yielded no shorebirds because of rainwater flooding. Counts were usually conducted at high tide when shorebirds had moved into the area from the mudflats in the bay. The water levels in the ponds were not influenced by tides.

Total Shorebird Numbers: Low numbers of shorebirds were counted throughout the survey period. Fewer than 100 shorebirds were counted during each census.

Plovers, Turnstones and Surfbirds: Killdeer were uncommon, and other plovers, turnstones and surfbirds were not seen.

Sandpipers: None of the sandpiper species were seen regularly. From 1 to 12 dowitchers were often present; when species identification was possible, they were reported as short-billed dowitchers. Twelve dunlins were seen on only one fall census, and 25 least sandpipers were seen on only one census in winter. Greater yellowlegs and marbled godwits were rare, and long-billed curlews were not reported.

Avocets and Stilts: American avocets, were fairly common to common throughout the reporting period. A few black-necked stilts were occasionally seen.

Phalaropes: None were recorded.

CENSUS SITE: Santa Ysabel (S3-40-5)

LOCATION: South end of Morro Bay, San Luis Obispo County.

DIRECTIONS FOR CONDUCTING CENSUS: Not received.

OBSERVERS: H. J. and Margaret Bender, 1301 Los Osos Valley Road, San Luis Obispo 93401

RESULTS: Nine censuses were conducted three times monthly between October 13 and December 27, 1969. All censuses were conducted at low tide. Greatest numbers of birds were present at the site at very low tide levels. Unfortunately, at these times the birds were too far away for adequate species identification.

Total Shorebird Numbers: During very low tide levels several hundred shorebirds were usually seen. Greatest numbers, up to 780, were counted in December.

Plover, Turnstones, and Surfbirds: A few black-bellied plovers were often seen. Other plovers, turnstones, and surfbirds were not recorded.

Sandpipers: The more common fall migrants were willets, marbled godwits, and least and western sandpipers. From 1 to 3 long-billed curlews were regularly reported. Ten sanderlings and one dowitcher (species not indentified) were recorded only in late fall.

Avocets and Stilts: None were reported.

Phalaropes: A few northern phalaropes were seen only in December. No Wilson's or red phalaropes were reported.

CENSUS SITE: Moffat Field (S4-24-1)

LOCATION: Northwest corner of San Luis National Wildlife Refuge, approximately 10 miles north of Los Banos, Merced County.

DIRECTIONS FOR CONDUCTING CENSUS: Census birds on Moffat Field from access roads along east side of Salt Slough between Lift No. 4 and Lift No. 5 and along "A" Canal.

OBSERVER: Gene A. Sipe, P. O. Box 2176, Los Banos 93635

RESULTS: Five censuses were conducted in the spring between April 17 and May 28, 1970. Only the end of the spring migration was censused.

Total Shorebird Numbers: A peak of 291 shorebirds was recorded on May 12. Shorebirds were also very common in mid-April. After the mid-May peak, numbers declined to below 50. When the field was flooded on April 25, few shorebirds were seen in the area.

Plovers, Turnstones, and Surfbirds: Killdeer were fairly common and were the only plovers seen.

Sandpipers: Western sandpipers were very common, and up to 35 dunlins were counted until April 12, when both species were last seen. Fifteen least sandpipers were counted only on April 17. Long-billed dowitchers were numerous only on May 12, when 41 were counted.

Avocets and Stilts: American avocets and black-necked stilts were seen regularly. Most avocets were seen in mid-May when up to 23 were counted. Stilts were most abundant on the last census, when 19 were counted.

Phalaropes: None were reported.

CENSUS SITE: Sprig Lake (S4-24-2)

LOCATION: North-western portion of the Kesterson National Wildlife Refuge, approximately 4 miles east of Gustine, Merced County.

DIRECTIONS FOR CONDUCTING CENSUS: From Turlock, drive west on Highway 140. Then turn left about $\frac{1}{4}$ mile south of Mud Slough, and drive about $1\frac{1}{2}$ miles to the parking lot at the end of the access road. Census birds from the east shore of Sprig Lake, about $\frac{1}{2}$ mile west of the parking lot.

OBSERVER: Gene A. Sipe, P. O. Box 2176, Los Banos 93635

RESULTS: Three censuses were conducted in the one month period between April 17 and May 18, 1970. Only the end of the spring migration was censused.

Total Shorebird Numbers: Total numbers declined from 350 on the first census to only 15 on the last. This was due chiefly to the disappearance of western sandpipers, dunlins, and dowitchers.

Plovers, Turnstones, and Surfbirds: The only plovers seen were three killdeer that were counted on the mid-May census.

Sandpipers: Up to 100 western sandpipers, 100 dunlins, and 200 dowitchers (species not identified) were counted on the two April censuses. These three species were not present on the May census.

Avocets and Stilts: American avocets were seen in progressively fewer numbers after 25 were counted on the first census. Black-necked stilts were uncommon.

Phalaropes: None were seen.

CENSUS SITE: Glory Hole (S4-24-3)

LOCATION: Merced National Wildlife Refuge, Merced County, 10 miles northeast of Los Banos. Glory Hole is located immediately southeast of Refuge Headquarters between fields 3, 4, 5, and 40.

DIRECTIONS FOR CONDUCTING CENSUS: Census shorebirds from the east edge of Glory hole.

OBSERVER: Gene A. Sipe, P. O. Box 2176, Los Banos 93635

RESULTS: Four censuses were conducted in spring between April 9 and May 21, 1970.

Total Shorebird Numbers: Numbers were low and ranged from only 12 to 26 shorebirds, mostly American avocets.

Plovers, Turnstones, and Surfbirds: Five killdeer were seen only on April 9. These were the only plovers seen.

Sandpipers: The only sandpiper species seen was one greater yellowlegs on May 21.

Avocets and Stilts: Up to 22 American avocets were regularly observed. Three black-necked stilts were recorded only on May 21.

Phalaropes: None were reported.

CENSUS SITE: Kern National Wildlife Refuge (S4-15-1)

LOCATION: Approximately 17 miles west of Delano in northwestern Kern County in the Tulare Lake Basin.

DIRECTIONS FOR CONDUCTING CENSUS: Not received.

OBSERVER: Lawrence G. Kline, P. O. Box 371, Delano 93215

RESULTS: Three censuses were conducted in late fall between October 30 and December 30, 1969. An additional census was conducted on April 27, 1970.

Total Shorebird Numbers: Fall counts ranged between 395 and 1,130 shorebirds. 2,256 shorebirds, mostly dowitchers, were counted on the April census.

Plovers, Turnstones, and Surfbirds: Killdeer were fairly common to common and were the only plovers observed.

Sandpipers: Dowitchers (species not indicated, probably the long-billed species) were very common in fall and very abundant in April, when 1,520 were counted. Western sandpipers were numerous only in April, when 490 were seen. A maximum of 85 least sandpipers was also counted in April, and it was on this census that the only dunlins were seen (28). From one to three greater yellowlegs were present during the fall censuses.

Long-billed curlews were numerous on only the October 30 census, when 50 were seen. It was also on this census that 50 sanderlings were reported. Willets, marbled godwits, and short-billed dowitchers were not reported.

Avocets and Stilts: American avocets were very common to abundant on all censuses. Most were seen in the fall, when up to 680 were counted. Black-necked stilts were rare in the fall censuses, and only 3 were seen in April.

Phalaropes: None were reported.

CENSUS SITE: Goleta Slough (S5-42-2)

LOCATION: About 8 miles west of Santa Barbara, Santa Barbara County. It is bordered on the south by the University of California at Santa Barbara.

DIRECTIONS FOR CONDUCTING CENSUS: Census all shorebirds in or flying above the marsh within the boundaries used during the Santa Barbara oil spill wildlife monitoring program.

OBSERVERS: Mr. and Mrs. Webster, 179 Canon Drive, Santa Barbara 93105

RESULTS: Six censuses were made between October 25, 1969 and January 18, 1970.

Total Shorebird Numbers: Fall numbers increased from about 150 shorebirds in the early counts to nearly 500 on the last census.

Plovers, Turnstones, and Surfbirds: Killdeer were generally common; a maximum of 45 was counted on November 11. Black-bellied plovers were fairly common; up to 17 were counted. Semipalmated plovers were generally uncommon; however, 14 were counted on one census in November. A few snowy plovers were counted on only two censuses in late fall, and there were not sightings of ruddy turnstones, black turnstones, or surfbirds.

Sandpipers: Dowitchers (not identified to species) were generally common in fall, when up to 36 were seen; however, 120 were present on the January 18 census. Willets were usually more abundant than dowitchers. A peak of 68 was counted in December. Greater yellowlegs were generally uncommon, although 15 were seen on one census in December. From 1 to 15 marbled godwits were seen on all censuses. They were most numerous in mid-November and mid-December.

Only a few sanderlings were seen on the early censuses, but numbers increased to a maximum of 53 in January. Dunlins were first recorded on the November 16 census, when a maximum of 30 was counted. They were also common in January. Both least and western sandpipers were most numerous in January with peaks of 66 and 85, respectively. Dunlins, least, and western sandpipers were nearly absent during the December census.

Spotted sandpipers were uncommon, and whimbrels were rare. There were no reports of long-billed curlews, knots, or wanderling tattlers.

Avocets and stilts: As many as 10 American avocets were often observed, and a few black-necked stilts were recorded on only two censuses.

Phalaropes: None were recorded.

CENSUS SITE: Hollister to Cojo Beach Transect (S5-42-4)

LOCATION: Sandy beaches south of Lompoc in Santa Barbara County.

DIRECTIONS FOR CONDUCTING CENSUS: The 9.6 miles of beach were censused using a four-wheel drive truck. The count was conducted at up to ten miles per hour during low tide.

OBSERVER: Robert L. Fordice, 440 E. Clark, Orcutt

RESULTS: One census was conducted on September 9, 1969. It was a follow-up census along a beach transect which was established to monitor wildlife populations during the Santa Barbara oil spill.

One thousand one hundred and twenty-seven shorebirds were counted. Small sandpipers were most numerous (410), but they were not identified to species. Black turnstones were abundant; 202 were counted. Killdeer, black-bellied plovers, willets, northern phalaropes and sanderlings were very common. Common species included snowy plovers and marbled godwits. Semipalmated plovers, ruddy turnstones and whimbrels were uncommon. One wanderling tattler and one dowitcher (species not identified) were recorded.

CENSUS SITE: Bolsa Bay (S5-30-1)

LOCATION: Approximately one mile southeast of Sunset Beach in western Orange County.

DIRECTIONS FOR CONDUCTING CENSUS: Censuses were conducted during low tides from along Pacific Coast Highway. The area censused includes marsh and mudflat habitats along the highway from Warner Avenue on the north to the southernmost limit of the bay, a distance of approximately two miles.

OBSERVERS: Robert L. Vernoy, 13252 19th Street, Chino 91710
Michael Bird, 12829 12th Street, Apt 2, Chino 91710

RESULTS: The following discussion of results deals with a more extensive area than was described in the original report. The original discussion was based on incomplete data.

Seventeen censuses were conducted from October 1, 1969 to June 15, 1970. Nineteen species of shorebirds were recorded.

Total Shorebird Numbers: A peak population of 4,047 shorebirds was counted on November 25, and nearly that many were counted on January 6. A smaller spring peak of 3,029 was reported on April 7. Unusually low numbers of small sandpipers were present on late December and early January censuses, resulting in a low total population of shorebirds at that time of year.

Plovers, Turnstones, and Surfbirds: Black-bellied plovers were the most numerous plovers, and they were present throughout most of the census period. They were generally very common in late fall and early winter. A decreased in abundance occurred after a peak of 203 was counted on January 20. They remained common in late winter and in spring as late as mid-June. Semipalmated plovers were most numerous on April 7 when 87 were reported. A smaller peak occurred on January 20 when 75 were observed. They were fairly common during most of the census period.

Snowy plovers were present on about half the censuses. A peak population of 24 was present on February 13. They were uncommon to fairly common when they were present. Killdeer were uncommon to fairly common throughout the year, although they were not reported on all censuses. A peak of 11 was counted on November 20.

From 1 to 9 ruddy turnstones were present on nearly all censuses. A single black turnstone was seen on March 27.

Sandpipers: Small sandpipers were the most numerous shorebirds present at this site. Most of these were western sandpipers.

A peak of 3403 westerns were counted on November 25. Large numbers also were present in January. Dunlins (up to 100) and least sandpipers (up to 75) were also counted; however, species of small sandpipers often were not distinguished on census reports.

Sanderlings were observed on only two censuses in March and April, when up to 17 were counted. Willets, observed on all censuses, were most numerous on October 1 when 188 were counted. They were generally very common from October to February, and common from March through June. Marbled godwits were very common throughout the census period. A peak of 265 was reached on January 6.

Dowitchers, not distinguished to species were very common to abundant throughout the reporting period. They were most numerous in January, when up to 808 were counted. They were last observed on May 21.

From 1 to 15 long-billed curlews were present from November through early April. The peak occurred on December 24. A single whimbrel was reported only on March 27. Greater yellowlegs occurred sporatically, mostly in late fall and in January. A peak of 16 was counted on November 4. They were rare during the spring migration.

Avocets and Stilts: American avocets were observed regularly throughout the year. The greatest number (31) occurred in early June.

Phalaropes: Northern phalaropes occurred only in fall: one on October 1 and 12 on December 9.

CENSUS SITE: San Elijo Lagoon (S5-37-2)

LOCATION: Immediately south of Cardiff-by-the-Sea in San Diego Co.

DIRECTIONS FOR CONDUCTING CENSUS: The entire lagoon is censused from five sites--two along the south shore of the lagoon and three along the north shore. The southeast corner of the lagoon is difficult to census during rainy weather.

OBSERVERS: Peggy MacBride, 1581 La Casita Drive, San Marcos 92069
Arthur W. Saddington, 10785 Lupin Way, La Mesa 92041
Allen and Karin Altman, 703 N. Rios Avenue, Solana Beach 92075
Jack Kinsey, 2410 Albatross, San Diego 92101

RESULTS: Twenty censuses were conducted from September 24, 1969 to June 2, 1970. The following discussion will be general because of problems with census procedures, inability to census one area during rainy weather, and fluctuating water levels during the year.

Total Shorebird Numbers: Greatest numbers were counted in March and April, when up to nearly 3,000 shorebirds were seen. Shorebirds were also very abundant in late November and late February. Fewer shorebirds were counted at high water levels, especially during the winter censuses.

Plovers, Turnstones, and Surfbirds: Killdeer were regularly seen throughout the reporting period and were very common at times. A maximum of 170 was counted on February 22. Up to 50 black-bellied plovers were counted in November, but they were numerous on only one other census in February, when 23 were counted. They were rare at other times of the reporting period. Six snowy plovers were seen on the first census in September. None were observed in fall or winter, and a few were occasionally recorded in spring.

During the fall migration semipalmated plovers were numerous on only one census, when 12 were counted on November 28. They were not seen again until late winter. They were generally uncommon throughout spring, although large numbers, at least 50, were seen on May 3. No ruddy turnstones, black turnstones, or surfbirds were recorded.

Sandpipers: Western sandpipers were generally the most abundant shorebirds recorded during the fall and spring migrations. Least sandpipers were counted in large numbers only in late winter and early spring, and dunlins were rarely seen. However, small sandpipers were counted together as unidentified sandpiper species during the spring censuses. Sanderlings were seen mainly in February and March, when up to 125 were recorded.

Willets were uncommon to fairly common; a maximum of 37 was counted on June 2. Dowitchers were common to very common, becoming abundant in late winter and early spring. Short-billed dowitchers were more numerous in November, and most of the dowitchers seen in winter and spring were the long-billed species. A peak of 1,750 long-billed dowitchers was recorded in early March.

A maximum of 60 marbled godwits was reported in late September. They were common in November but generally uncommon during the remainder of the survey period.

Greater yellowlegs were uncommon, and lesser yellowlegs were rare. One or two Baird's sandpipers were seen only in September and November. Spotted sandpipers were rare in winter and spring and were not seen in fall. From 1 to 7 common snipes were often seen. Whimbrels and long-billed curlews were not observed.

Avocets and Stilts: American avocets and black-necked stilts were regularly seen throughout the survey period. Both species were abundant in winter, early spring, and on the June 2 census.

Phalaropes: Northern phalaropes were seen from the first census until late November. A maximum of 500 was counted on October 24. Wilson's phalaropes were fairly common during the September and October censuses, but they were rare during the remainder of fall. Two were seen in late January. Red phalaropes were seen only in November, when up to 16 were counted.

CENSUS SITE: Batiquitos Lagoon (S5-37-3)

LOCATION: Approximately nine miles south of Oceanside in San Diego County.

DIRECTIONS FOR CONDUCTING CENSUS: A 20x spotting scope is used to count shorebirds. As much of the lagoon as possible is scanned from roadside stops along El Camino Real east, La Costa Boulevard on the south, and Highway 101 on the west. The area at the foot of Poinsettia Lane and approximately 1/2 mile of sandy beach at the mouth of the lagoon are included.

OBSERVERS: John and Dorothy Helmer, 907 Neptune, Encinitas 92024
Boyd and Minta Robinson, 1235 Summit Street, Encinitas 92024
David Rorick, Jr., P. O. Box 416, Oceanside 92056

RESULTS: Twelve censuses were conducted between December 5, 1969 and April 17, 1970. Most counts were made during low tides.

Total Shorebird Numbers: Greatest numbers were counted from December to mid-February, when up to 1,291 shorebirds were seen. Much lower numbers were counted in late winter.

Plovers, Turnstones, and Surfbirds: Black-bellied plovers were common from December through February, when up to 30 were counted. They were fairly common in March. Fifty-three semipalmated plovers were recorded on December 5, and from 2 to 12 were often seen during winter. Killdeer were uncommon. Snowy plovers were rare, although they nest here. No turnstones or surfbirds were recorded.

Sandpipers: Small sandpipers were the most abundant shorebirds, and these included dunlins, least, and western sandpipers. These species generally were counted together as unidentified sandpiper species by the observers, but western sandpipers were apparently the most abundant small sandpipers in late fall. The greatest number of small sandpipers was recorded on February 18, when 1,100 were counted.

Willets were common in December and March, when as many as 54 were seen. They were fairly common in January but were uncommon in February. Marbled godwits were uncommon to fairly common, and numbers fluctuated widely from census to census. A maximum of 27 was recorded on January 1.

Sanderlings were occasionally observed at the census site. A maximum of 50 was seen on March 1. Up to 3 greater yellowlegs and 11 dowitchers (species not identified) were present

only during December and January. Five whimbrels were seen only on January 22. Up to 35 lesser yellowlegs were seen only in early winter. Spotted sandpipers were rare, and no long-billed curlews were recorded.

Avocets and Stilts: American avocets were very common throughout the reporting period. Black-necked stilts were very common from December through February. Numbers declined in March, and few were seen by the end of the month. Both species were most abundant on the December 5 census, when 200 of each were counted.

Phalaropes: Twenty-five northern phalaropes were counted only on December 5. No Wilson's or red phalaropes were recorded.

CENSUS SITE: Buena Vista Lagoon (S5-37-4)

LOCATION: Immediately south of Oceanside in San Diego County.

DIRECTIONS FOR CONDUCTING CENSUS: Access to the mouth of the lagoon is through the St. Malo residential area. A 20x spotting scope is used to census shorebirds along approximately 500 yards of the sandy beach and in the marsh along the west side of the railroad tracks. The census is continued in the marsh at the east end of the lagoon. Shorebirds can be counted from along the edge of the landfill.

OBSERVERS: David Rorick, Jr., P. O. Box 416, Oceanside 92056
John and Dorothy Helmer, 907 Neptune, Encinitas 92024
Edna Meyer (no address given)

RESULTS: Eleven censuses were conducted between December 7, 1969 and April 19, 1970. Counts were made at various tide levels. The water level of the lagoon is not affected by tidal action.

Total Shorebird Numbers: Greatest numbers were counted in February and March. A peak of 177 was counted on March 11. December and January counts ranged from 26 to 64. Late March and April censuses yielded between 33 and 40 shorebirds.

Plovers, Turnstones, and Surfbirds: Killdeer were fairly common throughout winter in numbers as great as 13. Black-bellied plovers were seen during most censuses; a maximum of 21 was recorded on March 11. One to four semipalmated plovers were occasionally observed in fall and winter. Snowy plovers were present on only two occasions; 9 were counted on December 21, and 13 were counted on March 11. No turnstones or surfbirds were reported.

Sandpipers: From 3 to 14 willets were present during each census. One or a few greater yellowlegs were regularly seen from December through February. None were recorded in March and April. A few spotted sandpipers were seen regularly in December and January. A single individual was recorded in early March.

Dowitchers (mostly the long-billed species) were present throughout the reporting period. A peak of 49 long-billed dowitchers was recorded on February 22. Marbled godwits were uncommon; most were recorded in February and March.

Sanderlings were fairly common throughout the reporting period. Relatively few small sandpipers (i.e., dunlin, least, and western sandpipers) were seen, and none were recorded in December. Dunlins were not reported at all. Least sandpipers were rare; however, 19 were present on March 11. Western sandpipers were uncommon to fairly common; most (up to 27) were seen in March.

A few common snipes were seen in December and February, and a single long-billed curlew was seen only on February 22.

Avocets and Stilts: As many as 22 American avocets were present in the winter, but they were uncommon in April. Black-necked stilts were rare. Single individuals were occasionally seen only in the winter.

Phalaropes: One red and three Wilson's phalaropes were recorded only on the December 7 census. No nothern phalaropes were seen at the lagoon; however, up to 150 were seen on fresh water marshes in nearby San Luis Rey Valley, 1 mile east of Oceanside, during August, September, and early October.

CENSUS SITE: San Diego River Flood Control Channel (S5-37-5)

LOCATION: Immediately south of Mission Bay in San Diego, San Diego County.

DIRECTIONS FOR CONDUCTING CENSUS: Census shorebirds in the tidal sand and mudflat areas in the San Diego River Floodway between Midway Drive and Interstate 5 and, also, in the portion adjacent to the Mission Bay entrance channel.

OBSERVER: Jack L. Kinsey, 2410 Albatross, San Diego 92101

RESULTS: Eight censuses were conducted in the winter of 1970 from January 8 to March 26. Seven of these counts were made at high tide when the birds were most abundant.

Total Shorebird Numbers: Greatest number were present in late January and in February, when up to 2,885 shorebirds were counted. Nearly 2,000 were reported during the middle and late March censuses.

Plovers, Turnstones, and Surfbirds: Black-bellied plovers were very common throughout the winter and reached peak numbers (330) on January 24. The number steadily decreased to 60 by the end of March. Snowy plovers were common on all censuses. A maximum of 55 was counted on February 18. Semipalmated plovers were generally common in the winter. An unusually large number (195) appeared on February 2, but only five were counted at the end of March. From 3 to 12 killdeer were reported on nearly all censuses. As many as 17 ruddy turnstones were regularly counted throughout the winter. Twenty-five black turnstones were recorded on the first census, but numbers declined throughout the remainder of winter. Only one or two were seen in March. A single surfbird was recorded only on January 8. One golden plover was present during all four censuses between January 24 and March 4.

Sandpipers: Western sandpipers were the most abundant shorebirds recorded at the site. Approximately 1,500 were present throughout February and March but were much less numerous in January. Dunlins were common; usually 20 to 25 were counted throughout the winter. Least sandpipers were also common, numbering as high as 50 per census.

Willets were very common throughout the winter. A peak of 90 was counted on February 18. Dowitchers were abundant in January and February. As many as 500 long-billed dowitchers used the channel in February. Short-billed dowitchers were also numerous, but the large numbers of dowitchers made species recognition difficult. Both species were much less abundant in March. Fifteen long-billed dowitchers were last counted on March 4. As many as 25 short-billed dowitchers were seen at the end of March.

Sanderlings were very common throughout most of the winter, when up to 90 were counted. They became less abundant toward the end of winter. Marbled godwits were very common throughout winter, and up to 120 were seen.

Long-billed curlews were uncommon, and most were seen in early winter. One or two greater yellowlegs were often seen, mostly in January and February. One or two whimbrels were regularly observed in February and March. Wandering tattlers were rare. Lesser yellowlegs and knots were not reported.

Avocets and stilts: American avocets were very common, especially in early winter. A maximum of 180 was counted on January 24. Black-necked stilts, however, were rare.

Phalaropes: No phalaropes were reported.