WESTERN BIRDS

Volume 43, Number 3, 2012

FALL BIRD MIGRATION ON SANTA BARBARA ISLAND, CALIFORNIA

NICK LETHABY, 6807 Sweetwater Way, Goleta, California 93117; nlethaby@ti.com

WES FRITZ, 272 Meadow Road, Buellton, California 93427; wes-fritz@verizon.net

PAUL W. COLLINS, Santa Barbara Museum of Natural History, 2559 Puesta del Sol, Santa Barbara, California 93105; pcollins@sbnature2.org

PETER GAEDE, 918 Fellowship Road, Santa Barbara, California 93109; pgaede@earthlink.net

ABSTRACT: Between 2001 and 2011, we made 15 visits during the fall migration period to study bird migration on Santa Barbara Island, off the coast of southern California. We kept daily records of the composition and numbers of migrants, which are summarized in this paper and compared with compiled records of previous sightings from Santa Barbara Island. The area of the island most attractive to migrant land birds is the stand of the shrubs *Coreopsis gigantea* and *Eriogonum giganteum compactum* near North Peak. Both overcast skies and Santa Ana winds favor migrants' reaching the island, whereas northwest winds disfavor it. The island's isolation, small size, and limited vegetative cover make it an ideal location for observing daily changes in the composition of migrating birds.

Santa Barbara Island has large populations of breeding seabirds and is regularly visited by seabird biologists during the spring and summer. In addition, bird biologists occasionally spend time on the island for other purposes, such as studying the relationship between rodent and owl populations (Drost and Fellers 1991, Drost and McCluskey 1992). A number of these biologists have made observations of migrant landbirds, including vagrants (Pemberton 1928, 1929, Hunt and Hunt 1974, Jones et al. 1989, Hamilton et al. 2008). Because seabird breeding largely finishes during July and August, however, such observations of landbirds have been concentrated during the spring migration period, with far fewer records from the fall. Santa Barbara Island has not received the more regular fall coverage received by San Clemente (Sullivan and Kershner 2005) and San Nicolas (R. A. Hamilton pers. comm., P. W. Collins and H. L. Jones unpubl. data, Wehtje 2000) islands. Furthermore, very little has been published on the relationship between

weather and occurrence of migrant landbirds on the Channel Islands, with the exception of a relatively brief summary by Sullivan and Kershner (2005) for San Clemente Island.

From 2001 to 2011, we visited the island for 3 to 14 days each fall and kept daily records of migrant birds, along with records of weather conditions affecting both the island and adjacent mainland. In this article, we summarize the records of all species we observed on the island, their habitat use, and the relationship between various weather conditions and the arrivals of migrants.

GEOGRAPHY AND VEGETATION OF SANTA BARBARA ISLAND

Santa Barbara Island lies within the Channel Islands National Park and is located 62 km off the closest point on the mainland at Point Dume, Los Angeles County. The island is roughly triangular in shape, and, at about 260 hectares (just over 1 square mile), is the smallest of the eight Channel Islands, slightly smaller than Anacapa. Its steep cliffs rise to a marine terrace topped by two peaks—North Peak at 171 meters (562 feet) and Signal Peak at 194 meters (635 feet), the latter lying at the south end of the island. The coastline is almost entirely rocky, with a negligible amount of sandy shoreline (Figure 1). In addition to its remoteness from the mainland, the island is rather isolated from the other Channel Islands, with Santa Catalina, San Nicolas, and Anacapa islands all at least 36 km away.

Santa Barbara Island has no permanent water, and trees are completely absent, even in the canyons. Much of the island is open habitat, consisting of extensive areas of the exotic South African Iceplant (*Mesembryanthemum crystallinum*), grassland, patches of dirt laid bare by breeding Western Gulls (*Larus occidentalis*), and scattered patches of California Sea-blite (*Suaeda californica*).

Taller vegetation consists primarily of isolated patches of Giant Coreopsis (*Coreopsis gigantea*) and Prickly Pear (*Opuntia littoralis* var. *littoralis* and *O. oricola*), which occur mainly in and around the canyons on the east slope of the island and along the east side of North Peak. Giant Coreopsis was much more extensive on the east slope prior to 1952, but most was destroyed by a combination of introduced (but now extirpated) rabbits, fire, and past ranching (Philbrick 1972), which also resulted in a substantial expansion of the areas occupied by South African Iceplant. In addition, the endemic subspecies of Giant Buckwheat (*Eriogonum giganteum compactum*) occurs around some of the cliffs and associated rocky slopes, especially on North and Signal peaks.

METHODS

From 2001 through 2011, except in 2004, one or more of us visited the island annually during the fall migration period (Table 1). The dates of the visits were determined largely by the availability of the boat service to the island provided by Island Packers from Ventura, although starting in 2008 we were able to arrange some transportation with the National Park Service, whose boat visits the island more frequently. As a result, the dates of our visits

cluster into two periods: 12–27 September and 11–29 October. The exact dates and number of party-hours per visit are listed in Table 1. We counted all birds seen or heard, visiting areas known to concentrate migrants. We visited North and Signal peaks, which are consistently the most productive areas, every day, as we did the nursery/campground area and Cave Canyon. We checked Graveyard and Middle canyons and the plateau on the southeast part of the island once or twice per visit, the northwest plateau only once per visit. Ascertaining which areas concentrate which migrants has been a process of trial and error, complicated by the fact that frequent unfavorable weather (e.g., persistent northwest winds for most of the 2001 visit) limited the opportunities for determining such locations. As a result, we did not fully understand the importance of North and Signal peaks for migrants until midway through the September 2002 visit; thus data from these initial visits are likely incomplete in comparison to those from subsequent visits.

Although migrants move around on the island, our experience is that most individuals tend to remain in one general area. Therefore, we consider individuals seen in the North Peak, east-side canyons, and Signal Peak areas, for example, as different birds. However, a bird seen at different spots in the

Table 1 Dates, Observers, and Numbers of Party-Hours for Fall Migration Surveys on Santa Barbara Island

Year	Date	Observers	Party-hr[a]
2001	21–23 Sep	Lethaby	25
2002	20–22 Sep	Lethaby, H. Higley	25
2003	20–21 Sep	Lethaby	14
2005	23–25 Sep	Lethaby	25
2006	15–17 Sep	Lethaby	25
2007	14–16 Sep	Lethaby, Fritz	25
2007	12–14 Oct	Lethaby, Fritz	23.5
2008	12–14 Sep	Lethaby, Fritz	25
2008	20–29 Oct	Fritz	90
2009	21 Aug[b]	Lethaby, O. Johnson	2.5
2009	25–27 Sep	Lethaby, Fritz	25
2009	14–16 Oct	Lethaby	23.5
2010	16 Aug[b]	Lethaby, M. E. Powers	1.5
2010	24–26 Sep	Lethaby	25
2010	20–24 Oct	Fritz, Lethaby (22–24 Oct)	42
2011	22 Aug[b]	Lethaby	2.5
2011	16–18 Sep	Lethaby, Gaede	26
2011	19–26 Oct	Fritz, Lethaby (19–21 Oct), Gaede (21–23 Oct)	69

[a]Party-hours are used because most of the time observers were in the field together. For example, if two observers spent 6 hr together then 2 hr each on his own, this would be represented as 10 party-hr.

[b]Brief single-day visits to install recording units for monitoring nocturnal migrants. They are included here as they provide some data on August migrants

North Peak area would not be counted as different unless we clearly verified the presence of multiple individuals. Certain species, such as phoebes and kingbirds, proved much more mobile and occurred much more widely over the island in places that rarely hold other species. We estimated the number of individuals present with a daily total. This technique involved estimating the average, rather than the maximum, number of individuals consistently using each sector (North Peak, east coast terrace and canyons, Signal Peak, and northwest terrace), which is fairly straightforward for conspicuous species such as the phoebes, then summing these counts. Using the average counts for each sector reduced the risk of double counting as individuals sometimes ranged across multiple sectors.

Certain seabirds, such as grebes, rock-loving shorebirds, gulls, and terns we counted by observing feeding flocks offshore, rocky islets, and rocky shoreline, sometimes through a spotting scope. In addition, we checked concentrations of roosting cormorants and pelicans at least once each visit to determine if any booby species (*Sula* spp.) were present. Our effort for offshore and littoral species was neither systematic nor intensive, however, as our focus was on documenting migrant landbirds. Observation of rock-loving shorebirds was further complicated by the steep cliffs that make it difficult to view much of the shoreline.

We compiled and summarized the daily observations for each species and compared them to a database of bird records for Santa Barbara Island and the other Channel Islands assembled by P. W. Collins and H. L. Jones. This enabled us to assess the relative significance of our observations in relation to other records of migrants on Santa Barbara Island or on the Channel Islands in general.

Beginning in 2006, while on the island, we recorded weather conditions daily. Prior to 2006, we made only informal notes on the weather. We obtained weather data for Los Angeles from the National Oceanic and Atmospheric Administration's website (www.wrh.noaa.gov/lox) immediately prior to departing for the island.

To analyze the effect of weather on bird migration, we created tables that compared the composition and total number of migrants on various dates under different weather conditions. We selected these dates from both September and October and included examples of all the weather conditions that occurred during our study. When possible we selected dates that were preceded by at least one and usually multiple days of the same weather pattern. This was done to avoid data being skewed by migrants that were lingering after arriving under different weather conditions. The species composition and total number of migrants shown in Tables 2 and 3 exclude certain species that occur on the island regardless of the weather conditions: resident breeding species, the Burrowing Owl (a winter resident), or littoral or marine migrants such as the Common Loon, Eared and Western Grebes, Black Turnstone, Wandering Tattler, Heermann's and California Gulls, Common/Arctic Tern, and Royal Tern (see species accounts for scientific names). To further assist our study of the relationship between weather and migrants, we also compared the numbers of eastern wood warblers recorded under different weather conditions in September. These species were chosen because they demonstrated a clear pattern of arriving much more frequently under some conditions than others.

Table 2 Weather Conditions during September Surveys Relative to Effort and Numbers of Migrants on Santa Barbara Island

Date	Weather	Party-hours	Number of species	Number of individuals
21 Sep 2003	**Northwest winds** and mostly clear the night before and the previous day.	8	12	17
17 Sep 2006	Calm and clear on the island the previous night, but strong **Santa Ana winds** on the mainland 16 and 17 Sep, northwest winds on 15 Sep.	8	35	147
16 Sep 2007	**Northwest winds** the preceding night before and preceding 2 days.	7	12	29
14 Sep 2008	**Marine layer** during the day and preceding night before and for over the preceding week.	8	48	204
25 Sep 2010	Previous night was clear with a WSW wind, 24 km/hr, in the evening that became calm after 9:30 PM through to the morning. At Los Angeles a light WSW wind in the evening became calm before yielding to weak **Santa Ana winds** in the early hours of the morning. Conditions the previous day were similar.	10	33	99
17 Sep 2011	A high **marine layer** during the night continued throughout the day. Santa Catalina Island was clearly visible. The previous day the marine layer was lower, visibility about 16 km.	12	63	236

RESULTS

Habitat for Migrants

On Santa Barbara Island, migrants typically occupy habitat quite different from that they use on the larger Channel Islands. On these other islands, birding is rather similar to what it is on the mainland, with observations concentrated on vagrant traps with mesic habitats such as Lemon Tank, San Clemente Island (Sullivan and Kershner 2005), or Army Springs, San Nicolas Island (R. A. Hamilton pers. comm.), or in ornamental plantings around residential areas. On Santa Barbara Island, such habitats are completely absent.

The patches of Giant Coreopsis, Giant Buckwheat, and prickly pear serve as "forests" that attract species that prefer some kind of cover. In September, warblers are especially attracted to Giant Buckwheat, which flowers at this time and attracts numerous insects. All these scrub patches are also attractive to most sparrows. Areas of open grassland or a mix of grass, bare dirt, *Suaeda*, and iceplant also attract some sparrows and are the habitat preferred by Horned Larks, pipits, longspurs, and Western Meadowlarks.

Table 3 Weather Conditions during October Surveys Relative to Effort and Numbers of Migrants on Santa Barbara Island

Date	Weather	Party-hours	Number of species	Number of individuals
13 Oct 2007	**Overcast with persistent light rain** and a light south wind starting around 20:00 the previous evening. By dawn the rain had stopped and there was a moderate W wind and broken cloud cover that enabled reasonably good visibility. The preceding days were clear.	10	28	210[a]
14 Oct 2009	**Overcast with some rain**. Persistent light rain fell the previous night, and in the morning the island was visible from 2–3 km away. Overcast had persisted for several days previously, although with less rain.	5.5	13	33
16 Oct 2009	Northwest winds and clear skies during the night until 08:00, when **Santa Ana winds** arrived. Santa Ana winds had blown during the night on the mainland.	7.5	34	310
22 Oct 2010	**Overcast with occasional brief showers** during the night and day. The island was visible from 16 to 19 km away. The weather had been similar for several days previously.	10	37	213
24 Oct 2010	**Northwest winds** and clear skies during the night and day. The previous day had been clear but with very little wind, while the days prior to that (see above entry) had been overcast with some rain.	7	20	86[b]
20 Oct 2011	**Marine layer**: calm and completely cloudy all night. Santa Catalina Island partly visible at dawn. Previous day was also cloudy but with WSW wind, 16 km/hr.	10	55	318

[a]We estimated that about 70–75% of these birds were not new arrivals, as there were already large numbers of White-crowned and Savannah Sparrows on the island.

[b]We estimated that <10% of these birds were new arrivals as the migrants present consisted of species such as the White-crowned Sparrow that were already present in some numbers.

The following areas (Figure 2) were the most attractive for migrant landbirds:

- The North Peak area, including the long strip of Giant Coreopsis and Giant Buckwheat (Figure 3) that extends down from the summit and the prickly pear patch somewhat lower on the southeast flank, is the area where migrants are found most reliably.
- The nursery by the campground and ranger's residence has become attractive for migrants since it was created in 2007. The nursery is used to grow young plants to assist in restoration of native vegetation. In

addition to fresh green vegetation, this area often has water in plastic container tops under the tables storing the young plants. This is the only fresh water on the island available to migrant birds.

- Cave, Middle, and Graveyard canyons, immediately south of the campground, have extensive areas of coreopsis and prickly pear (Figure 4) that typically hold a few migrants.
- The extensive areas of Giant Buckwheat at the summit and along the seaward slopes of Signal Peak are attractive to migrants in September, but they are much less productive in October.
- The *Suaeda* and grass flats on the southeastern and, especially, northwestern "benches" of the island sometimes attract a variety of sparrows and, occasionally, roving flocks of insectivores.

As a result of the lack of wetlands and sandy shorelines, most waders, waterfowl, and shorebirds occur only sporadically, except for a few rock-loving shorebirds, with most sightings of other species being of birds flying over the island.

SPECIES ACCOUNTS

Here we summarize the status of each species observed during our visits and compare this information with that in the database of bird records for the Channel Islands (P. W. Collins and H. L. Jones, unpubl. data). Photographic documentation ("ph.") is archived at the Santa Barbara Museum of Natural History.

We summarize the more frequent species as follows:

Recorded almost daily: The species was recorded on 75% or more of the days during the date range given.

Recorded regularly: The species was recorded on 50–74% of the days during the date range given.

Recorded fairly regularly: The species was recorded on 30–49% of the days during the date range given.

For species that occurred on fewer than 30% of the days, we list all records. For resident landbirds and seabirds, of which we made only casual observations, the accounts begin with the phrase "not formally counted."

Greater White-fronted Goose (*Anser albifrons*). A flock of at least 49 birds circled the island several times on 19 Oct 2011 (ph.). This is the only record for Santa Barbara Island.

Cackling Goose (*Branta hutchinsii*). We noted single birds of the race *leucopareia* on 24 Oct 2010 (ph.) and 23 Oct 2011(ph.). Four birds flew over the island on 22 Oct 2010, one of which had a prominent neck band, suggesting *leucopareia*. There are seven other records of the "Canada Goose" from the island, most preceding the split of the Canada and Cackling Geese, but including one assigned to the Cackling Goose.

Northern Pintail (*Anas acuta*). Eleven birds flew over the island on 22 Oct 2010. There are just two previous records, both from fall.

Green-winged Teal (*Anas crecca*). Two birds flew over the island on 20 Oct 2011. There is just one previous record, from spring.

Surf Scoter (*Melanitta perspicillata*). Not formally counted. Three immature or female birds were offshore 21–23 October 2011, and a flock of five flew past the north tip of the island on 24 Oct 2011 (ph.). There are just three other fall records for Santa Barbara Island.

Common Loon (*Gavia immer*). Not formally counted. A single bird was offshore 24–26 Sep 2010. There is no previous fall record for Santa Barbara Island.

Eared Grebe (*Podiceps nigricollis*). Not formally counted. Recorded regularly 20–26 Oct with high counts of 43 on 20 Oct 2011 and 70 on 24 Oct 2010. A single individual was present on 21 Sep 2001, five on 23 Sep 2003.

Western Grebe (*Aechmophorus occidentalis*). Not formally counted. Recorded regularly 14–26 Oct. Typically one to six birds present, with a high count of 40 on 20 Oct 2011. An earlier single individual was offshore on 21 Sep 2003.

Clark's Grebe (*Aechmophorus clarkii*). Not formally counted. Single individual offshore on 21 Oct 2011. This is the only record for Santa Barbara Island and one of nine for the Channel Islands.

Northern Fulmar (*Fulmarus glacialis*). Not formally counted. A single individual was observed offshore on 24 Oct 2010.

Sooty Shearwater (*Puffinus griseus*). Not formally counted. A single individual was observed offshore on 21 Oct 2011.

Brown Pelican (*Pelecanus occidentalis*). Not formally counted, but hundreds seen daily, with frequent large feeding flocks, often associated with Brandt's Cormorants.

Brandt's Cormorant (*Phalacrocorax penicillatus*). Not formally counted, but hundreds were seen daily, with frequent large feeding flocks. Brandt's is by far the most common cormorant on Santa Barbara Island.

Double-crested Cormorant (*Phalacrocorax auritus*). Not formally counted, but up to about 40 were seen most days.

Pelagic Cormorant (*Phalacrocorax pelagicus*). Not formally counted, but up to about 10 were seen most days.

Great Blue Heron (*Ardea herodias*). Two immatures flying offshore on 22 Sep 2001, two flying offshore on 17 Sep 2006, and a single immature staying on the island 13–14 Sep 2008.

Great Egret (*Egretta alba*). Three observed flying around the north tip of the island on 20 Oct 2011 (ph.). This is the only fall record and just the second for Santa Barbara Island.

Snowy Egret (*Egretta thula*). Single individual on 20 Sep 2002, two on 23 Oct 2008. These are two of only four records for Santa Barbara Island.

Osprey (*Pandion haliaetus*). Two, an adult and immature seen separately, on 12 Oct 2007.

Northern Harrier (*Circus cyaneus*). Recorded regularly 12–29 Oct, with a high count of five (an adult male, two adult females, and two juveniles) on 12 Oct 2007. Single individuals were recorded on 15 Sep 2007, 26 Sep 2009, and 16–17 Sep 2011.

Sharp-shinned Hawk (*Accipiter striatus*). Single individual on 21 Oct 2008. This is one of only four records for Santa Barbara Island, three of which are from the fall.

American Kestrel (*Falco sparverius*). Resident breeder seen daily. It is unclear if the species also occurs as a migrant. High count of nine on 23 Oct 2011.

Merlin (*Falco columbarius*). Recorded fairly regularly 13 Sep–29 Oct with a high count of three on 25 Sep 2005. The latter were seen as a loose group, mobbing each other, as they headed southeast out to sea from Signal Peak.

Peregrine Falcon (*Falco peregrinus*). A resident pair, seen most days, has nested successfully on the island since 2008 (L. Harvey pers. comm.). The young are typically chased from the island by the parents prior to our September visits, although on 18 Sep 2011 we observed a juvenile being mobbed by the adult male. We observed single juveniles on 25–26 Oct 2008 and 20 Oct 2011. Otherwise, we have no evidence of a migratory movement of this species to Santa Barbara Island.

Black-bellied Plover (*Pluvialis squatarola*). Solitary bird seen on 22 Sep 2001, with another heard on 23 Oct 2011.

Semipalmated Plover (*Charadrius semipalmatus*). Two seen flying over the island and vocalizing on 14 Sep 2008, and two were heard on 17 Sep 2011. There are only two other Santa Barbara Island records, both in August and September.

Killdeer (*Charadrius vociferus*). Single individuals on 21 Oct 2008 (heard only) and 21–23 Oct 2011, with two present on 22 Oct 2010 and again on 20 Oct 2011 (ph.). There are only three other fall records for Santa Barbara Island, all of single birds.

American Oystercatcher (*Haematopus palliatus*). Two sightings of solitary birds, both photographed and accepted by the California Bird Records Committee (CBRC). One seen on 24 Sep 2005 (Iliff et al. 2007), the other on 16 Sep 2007 (Pike and Compton 2010). We have seen no indication of hybrid Black × American Oystercatchers on Santa Barbara Island.

Black Oystercatcher (*Haematopus bachmani*). Not formally counted, but fairly common resident along the rocky shoreline and offshore reefs, with up to 12 seen daily. We estimated an island-wide total of 18 from 20 to 29 Oct 2008.

Black-necked Stilt (*Himantopus mexicanus*). A single bird was standing on the rocky shoreline with a Black Oystercatcher on 24 Sep 2010. This is the second record for Santa Barbara Island.

American Avocet (*Recurvirostra americana*). Two birds seen to arrive at the island on 26 Oct 2011 (ph.). This is the only record for Santa Barbara Island and the latest in fall for the Channel Islands.

Solitary Sandpiper (*Tringa solitaria*). Single individuals heard on 13 Sep 2008 and seen flying over the island on 14 Sep 2008. These are the only records for Santa Barbara Island.

Wandering Tattler (*Tringa incana*). Not formally counted, but one to three birds regularly present along the island's rocky shoreline.

Greater Yellowlegs (*Tringa melanoleuca*). Single individuals heard on 22 and 26 Oct 2008 and on 20 and 21 Oct 2011. One was seen flying over the island, vocalizing, on 17 Sep 2011. More unexpected was an individual that stayed by the campground 23–24 Oct 2011. There is only one previous Santa Barbara Island record.

Whimbrel (*Numenius phaeopus*). Seen flying over the island, 15 on 13 Sep 2008 and two on 17 Sep 2011. This species' rarity on Santa Barbara Island is surprising, as it is a common migrant and winter visitor to San Clemente Island, where it frequents open upland habitats somewhat similar to those on Santa Barbara Island (Sullivan and Kershner 2005).

Marbled Godwit (*Limosa fedoa*). A flock was heard at night flying over the island on 23 Sep 2005. There are two previous fall records for Santa Barbara Island, both of single birds.

Black Turnstone (*Arenaria melanocephala*). Not formally counted but one to five birds present regularly.

Sanderling (*Calidris alba*). One seen on 22 Sep 2001. There are four other fall records and one winter record for Santa Barbara Island.

Western Sandpiper (*Calidris mauri*). Heard flying over the island on 14 Sep 2008. This is the first fall record for Santa Barbara Island.

Least Sandpiper (*Calidris minutilla*). Two seen and heard flying over the island on 17 Sep 2011. This is only the second fall record for Santa Barbara Island.

Pectoral Sandpiper (*Calidris melanotos*). One was seen and heard flying over the island on 26 Oct 2008, and a single juvenile was feeding near the campsite 16–17 Sep 2011. These are the only records for Santa Barbara Island.

Long-billed Dowitcher (*Limnodromus scolopaceus*). Two were seen and heard flying over the island on 22 Oct 2010; two were recorded on 23 Oct 2010. On the latter date, one of the birds was attacked and killed by a Peregrine Falcon. These are the only records for Santa Barbara Island.

Short-billed Dowitcher (*Limnodromus griseus*). One heard flying over the island on 14 Sep 2008.

Red-necked Phalarope (*Phalaropus lobatus*). One seen flying over the island on 13 Sep 2008.

Heermann's Gull (*Larus heermanni*). Not formally counted but recorded on 13 dates from 12 Sep to 20 Oct, with a high count of six on 14 Oct 2007. Probably regular offshore in small numbers. The majority of these birds were in their first or second year. This species is certainly much less common on Santa Barbara than on many of the other Channel Islands such as San Clemente, where Sullivan and Kershner (2005) described it common, with a high count of 200 on just a single beach.

California Gull (*Larus californicus*). Not formally counted, but recorded regularly 14–29 Oct, with a high count of up to 20 from 20 to 29 Oct 2008. A single individual seen earlier on 14 Sep 2008.

Western Gull (*Larus occidentalis*). Not formally counted, but hundreds seen daily, with many attending the frequent large feeding flocks of pelicans and cormorants.

Common/Arctic Tern (*Sterna hirundo/paradisaea*). Up to 70 observed feeding offshore from 15 to 17 Sep 2006. On the basis of closer views of birds seen just north of the island during the boat crossings immediately before and after this visit, some, if not all, were Common Terns.

Royal Tern (*Thalasseus maximus*). Not formally counted, but recorded almost daily, with a high count of 200 seen 12–14 Sep 2008. Most were resting on offshore rocks along the west and southwest coast of the island.

Pomarine Jaeger (*Stercorarius pomarinus*). Not formally counted. One offshore on 24 Oct 2011; two offshore on 25 Oct 2011.

Pigeon Guillemot (*Cepphus columba*). A juvenile was off the boat dock on 16 Sep 2007, the latest fall record for Santa Barbara Island by over three weeks. This species is a common breeder on the island, but the birds typically depart by mid-to-late August.

Rock Pigeon (*Columba livia*). One seen on 14 Oct 2007; two seen on 13 Sep 2008. Another 19–23 Oct 2011 sported leg bands and was clearly a disoriented racing pigeon rather than a "wild" bird.

Eurasian Collared-Dove (*Streptopelia decaocto*). Single individuals on 13 Sep 2008, 16–17 Sep 2011, and 20 Oct 2011. These are the only fall records for Santa

Barbara Island, with the only other record being of remains found in a Peregrine Falcon nest.

White-winged Dove (*Zenaida asiatica*). Single individuals on 20 Sep 2002 and 25 Sep 2009. Sullivan and Kershner (2005) described this species as an uncommon migrant on San Clemente Island with counts of up to 15 in one day, conspicuously more numerous than on the adjacent mainland coast, where it is a rare migrant. On Santa Barbara Island we found this species is not obviously more frequent than on the mainland. Unlike most migrants reaching the Channel Islands, the White-winged Dove presumably originates from the east-southeast, from the Colorado Desert region of California. It seems possible that Santa Catalina Island, which lies on a path between Santa Barbara Island and the breeding range and is not well covered by birders, may be "capturing" White-winged Doves that stray offshore along this vector before they reach Santa Barbara Island.

Mourning Dove (*Zenaida macroura*). Recorded almost daily from 12 Sep to 29 Oct, with high counts of 12+ on 21 Sep 2002 and up to 20+ from 12 to 14 Sep 2008. This species has bred occasionally on Santa Barbara Island.

Barn Owl (*Tyto alba*). A resident breeder on Santa Barbara Island. We recorded it regularly, with a high count of 20 on 16 Sep 2011. We noted substantial annual variability in its abundance, which Drost and Fellers (1991) found linked to fluctuations in the island's population of Deer Mice (*Peromyscus maniculatus*).

Burrowing Owl (*Athene cunicularia*). Recorded regularly from 15 Sep to 29 Oct. The maximum count was ten on 22 Oct 2010; island-wide population estimates were eight, six, and nine birds, respectively, for Oct 2008, 2009, and 2011. This species was not recorded 12–14 Sep 2008 or 14–16 Sep 2007, suggesting that it may not arrive in numbers until around 20–25 Sep. This agrees with the findings of Drost and McCluskey (1992), who first recorded the species in the "latter part of September." The Burrowing Owl is a regular winter visitor and breeds intermittently on Santa Barbara Island in years with high rodent populations. Thus some of our records may pertain to resident breeders.

Long-eared Owl (*Asio otus*). Single individuals 22–23 Oct 2010 (ph.) and on 19 Oct 2011 (ph.). Historically, this species occurred much less frequently on Santa Barbara Island than the Short-eared Owl, with records ranging from 7 Sep to 26 May. There is no evidence that the Long-eared Owl has bred on the island, and suitable habitat is lacking, although there is a record from 5 July 1974.

Short-eared Owl (*Asio flammeus*). Single individuals on 14 Oct 2007, 14 Oct 2009, and 20 and 23 Oct 2010, and up to three 19–23 Oct 2011. In the past, this species was a frequent winter visitor to the island, with as many as 16 birds present. It breeds irregularly during periods of peak rodent abundance, with the last confirmed nesting in 2001.

Common Nighthawk (*Chordeiles minor*). One seen and heard to vocalize three times on 20 Oct 2011. There are four spring records from the Channel Islands, including one from Santa Barbara Island, but the species was previously unknown in fall. The Common Nighthawk is casual to accidental along the coast of southern California, where it occurs primarily as a late spring vagrant from early June into early July (Garrett and Dunn 1981). However, there are also several early-fall records and a 27 Oct specimen from Los Angeles County (Garrett and Dunn 1981).

Lesser Nighthawk (*Chordeiles acutipennis*). Single individuals on 14 Oct 2007, 16 Sep 2011, and (identified as a different bird because of the lack of primary wear) 17–18 Sep 2011; two on 13 Sep 2008. These represent four of only seven fall records for the island.

Common Poorwill (*Phalaenoptilus nuttallii*). Solitary birds seen on 20 Sep 2002, 24 Oct 2008, 15 Oct 2009, 21 Oct 2010, and 19 and 21 Oct 2011.

Vaux's Swift (*Chaetura vauxi*). Seven on 21 Sep 2001, two on 17 Sep 2011, and single individuals on 24 Sep 2005, 17 Sep 2006, 13 Sep 2008, 16 Oct 2009, 16 Sep 2011, and 20–21 Oct 2011. Some of these birds were viewed at some distance and are perhaps best regarded as *Chaetura* sp.

White-throated Swift (*Aeronautes saxatilis*). One on 24 Sep 2005. There is only one other fall record for Santa Barbara Island.

Black-chinned Hummingbird (*Archilochus alexandri*). Up to three on 13 and 14 Sep 2008. This is the only fall record from Santa Barbara Island. This species is very rare offshore with just five records on Southeast Farallon Island off San Francisco between 1968 and 1999, all between late August and mid September (Richardson et at. 2003). There are only two other well documented fall records from the Channel Islands, both from San Clemente Island in early September. The birds on Santa Barbara Island, all females or immature, were initially detected by their call notes, clearly different from those of the regularly occurring Anna's Hummingbird. Identification to the genus *Archilochus* was then confirmed through observation of the very narrow inner primaries. On one bird, the broad blunt tip of primary 10 was observed, eliminating the very similar Ruby-throated Hummingbird (*A. colubris*).

Anna's Hummingbird (*Calypte anna*). Recorded fairly regularly 12 Sep–25 Oct, with high counts of up to three 19–25 Oct and three on 25 Sep 2010. A number of unidentified hummingbirds observed briefly were likely of this species.

Allen's Hummingbird (*Selasphorus sasin*). A single adult male on 15 Sep 2007 and up to two from 20 to 25 Oct 2008. These are likely of the nonmigratory race *sedentarius,* which is resident on most of the other Channel Islands. Males of the nominate race have generally left California for their winter range well before September. These are the only fall records for Santa Barbara Island.

Belted Kingfisher (*Megaceryle alcyon*). Single individuals 23–24 Sep 2005 and on 26 Oct 2008. This species is regular on San Clemente Island, especially in fall and winter, and has been recorded several times previously on Santa Barbara Island.

Acorn Woodpecker (*Melanerpes formicivorus*). Single individuals 20–21 Sep 2003 and on 13 Sep 2008. There are six other records for Santa Barbara Island, five of which were from the fall. This species has colonized both Santa Cruz and Santa Catalina islands over the last century and appears to be somewhat prone to offshore dispersal.

Northern Flicker (*Colaptes auratus*). Single Red-shafted Flickers seen 12–14 Oct 2007, 24–25 Oct 2008, and on 21 Oct 2011, with at least two present 21–24 Oct 2010.

Olive-sided Flycatcher (*Contopus cooperi*). Single individuals on 13 Sep 2008 and 16 Sep 2011, and two on 17 Sep 2011. There are only six fall records from the island, all from 9 to 20 Sep.

Western Wood-Pewee (*Contopus sordidulus*). Recorded fairly regularly from 12 to 23 Sep, with a high count of 12 birds on 17 Sep 2011. Single individuals also seen on 14 Oct 2007 and on 21 and 25 Oct 2011. The latter record is comparable to the latest dates for San Diego County (Unitt 2004), but the species has been recorded later elsewhere on the mainland coast, an example being one 3–6 Dec 2001 in Santa Barbara County (Lehman, unpubl. data).

Willow Flycatcher (*Empidonax traillii*). Single individuals on 16 Sep 2006, 14 Sep 2008, and 16 Sep 2011, three on 13 Sep 2008, and six on 17 Sep 2006.

Least Flycatcher (*Empidonax minimus*). Single individuals on 17 Sep 2006 and 17 Sep 2011 represent the only fall records for Santa Barbara Island.

Hammond's Flycatcher (*Empidonax hammondii*). One on 13 Oct 2007 was in fresh plumage with a bright yellow belly. This species has seldom been recorded on Santa Barbara Island in fall.

Gray Flycatcher (*Empidonax wrightii*). Single individuals on 21 and 22 (believed different) Sep 2002, 13–14 Oct 2007, 12 Sep 2008 (ph.), and 17 Sep 2011, and three on 25 Sep 2010. These are the only fall records for Santa Barbara Island and constitute about half of the fall records for all of the Channel Islands.

Dusky Flycatcher (*Empidonax oberholseri*). Single individuals on 13 Oct 2007, 25 Sep 2009, 14 Oct 2009, and 26 Sep 2010 (ph.) represent the only fall records for Santa Barbara Island. The October records are quite late for California, but both birds were seen very well, although they were not heard to vocalize. All of the birds above were identified by a combination of structure, behavior, and plumage: relatively short to moderate primary projection beyond the tertials, rather long tail, relatively long, narrow, largely dark bill, olive mantle contrasting with gray head, lack of highly contrasting wing bars and tertial edges, and a lack of tail dipping. Our examination of the one on 25 Sep 2009 was somewhat cursory, as we were concentrating on the identification of a Blue-headed Vireo present in the same area. If correct, these records represent an unusual number of Dusky Flycatcher records for a location along the coast of California. The bird seen 26 Sep 2010 was extensively videotaped, and D. M. Compton, M. T. Heindel, A. Leukering, and S. G. Mlodinow (pers. comm.) concurred with the identification. The Dusky Flycatcher is very rare along the mainland coast of Santa Barbara County in fall, with only one published record through 2011 (Lehman 1994, Lehman unpubl. data). However, it appears to be slightly more frequent farther south, with Orange County having some 11 accepted coastal fall records (Hamilton and Willick 1996, B. E. Daniels pers. comm.) ranging from 6 Sep to 6 Nov. In coastal San Diego County the species is a very rare fall migrant from 11 Sep to 12 Oct, as attested also by four specimens from Point Loma (Unitt 1984, 2004). K. L. Garrett (pers. comm.) commented that no proper effort had been made to vet claims of this species in coastal Los Angeles County, although he was aware of a few reliable fall and winter records.

Pacific-slope Flycatcher (*Empidonax difficilis*). Recorded regularly 21 Aug–25 Oct. The latter date is the latest recorded for the species on Santa Barbara Island. Usually, up to six recorded per day, but ten were noted on 17 Sep 2011. We presume most or all of these individuals were the Pacific-slope rather than the Cordilleran (*E. occidentalis*) and have no information on whether any were of the subspecies endemic to the Channel Islands, *E. d. insulicola*.

Empidonax sp. A bird calling *whit* on 14 Sep 2008 was either a Dusky or Least Flycatcher, most likely the latter. A probable Least Flycatcher was seen on 21 Oct 2011. A bird photographed on 13 Sep 2008 was considered by experts to be a Least, Dusky, or Hammond's Flycatcher. Another *Empidonax*, again one of the Least/Dusky/Hammond's trio, was seen on 13 Sep 2008 but too briefly and at too great a distance for definite identification.

Black Phoebe (*Sayornis nigricans*). Recorded regularly 15 Sep–29 Oct, with a maximum count of up to eight 20–29 Oct 2008; otherwise, one to four birds were noted.

Say's Phoebe (*Sayornis saya*). Recorded almost daily 12 Sep–29 Oct, with high counts of six on 12 Oct 2007 and up to 15 from 20 to 29 Oct 2008.

Ash-throated Flycatcher (*Myiarchus cinerascens*). Single juveniles on 21 Sep 2002, 15 Sep 2006, 14 Sep 2008, 26 Sep 2010, and 16 Sep 2011, with two on 21 Aug 2009. Birds in fresh basic plumage noted on 16 Oct 2009 and 22 Oct 2010.

Tropical Kingbird (*Tyrannus melancholicus*). One from 22 to 24 Oct 2011. There are only eight fall records for the entire Channel Islands, all earlier than this individual, and just one previous fall record for Santa Barbara Island. This species is surprisingly rare on offshore islands, with only 13 recorded on well-watched Southeast Farallon Island between 1968 and 1999 (Richardson et at. 2003). In contrast, mainland Santa Barbara County recorded approximately 153 between 1968 and 2010 (Lehman unpubl. data).

Cassin's Kingbird (*Tyrannus vociferans*). Single juvenile seen on 16 Sep 2006 is one of only four recorded on Santa Barbara Island in fall.

Western Kingbird (*Tyrannus verticalis*). Single individuals seen on 15 and 17 Sep 2006, 14 Sep 2008, 24 Sep 2010, and 16 and 18 Sep 2011, with four on 17 Sep 2011.

Eastern Kingbird (*Tyrannus tyrannus*). One on 12 and 13 Sep 2008 represents the only fall record for this species from Santa Barbara Island.

Loggerhead Shrike (*Lanius ludovicianus*). Single immature on 16 Aug 2010. The lack of records during our September and October surveys parallels the pattern on Southeast Farallon Island, where this species was recorded only eight times in fall between 1968 and 1999, with the latest date being 11 Sep (Richardson et al. 2003).

Gray Vireo (*Vireo vicinior*). One on 17 Sep 2011 (Figure 5) is the only one recorded for Santa Barbara Island and one of only nine for the Channel Islands, all of which have occurred between 5 and 24 Sep. This species is a casual vagrant on the mainland coast of California, with only two generally accepted records: a specimen taken at Pt. Fermin, Los Angeles County, on 9 Sep 1967 (Garrett and Dunn 1981) and an individual photographed near Oxnard, Ventura County, from 2 to 7 Oct 2011. There are five additional reports supported by documentation from the Channel Islands as follows: Santa Catalina 7 Sep 1973 (*Am. Birds* 28:109), Anacapa 14 Sep 1976 (*Am. Birds* 31:224), Santa Cruz 24 Sep 1977 (University of California Santa Barbara specimen 7343), San Clemente 23 Sep 1976 (*Am. Birds* 31:224), and San Nicolas 5 Sep 1988 (*Am. Birds* 43:170). Three additional undocumented reports from San Clemente Island are consistent with the pattern of the documented occurrences: 7 Sep 2000, 21 Sep 2000, and 21 Sep 2001 (Collins and Jones unpubl. data).

The greater frequency of migrant Gray Vireos on the Channel Islands than on the nearby mainland appears genuine, rather than the result of misidentifications of two potential confusion species, the Least Bell's Vireo (*V. bellii pusillus*) and Plumbeous Vireo (*V. plumbeus*). At this season, all species are in fresh adult or formative plumage (Pyle 1997), which simplifies identification. Also, the pattern of occurrence does not support the notion of misidentification. There are only two records of the Plumbeous Vireo from the Channel Islands, both from Santa Rosa Island, indicating that this species is much rarer on the islands than on the mainland, where it is a rare but now annual migrant. In addition, the Plumbeous Vireo is a relatively late migrant to the California coast, most frequent in October, with early dates of 13 Sep in Santa Barbara County (Lehman 1994, Lehman unpubl. data) and 16 Sep in San Diego County (Unitt 2004). Therefore, the window of the Gray Vireo's occurrence on the Channel Islands overlaps only slightly with that of the Plumbeous Vireo. Furthermore, of the three accepted Channel Island records of the Gray Vireo in the period of overlap with the Plumbeous Vireo, one is supported by a specimen, another by a photograph. Bell's Vireo has occurred only four times in fall migration on the Channel Islands, between 26 Aug and 7 Oct, and is only a rare to very rare fall migrant along the coast of California away from sites where it breeds. Given the rarity of migrant Least Bell's Vireos on both the Channel Islands and the mainland California coast, it appears improbable that misidentification of this subspecies could account for most of the Gray Vireo records from the Channel Islands.

Cassin's Vireo (*Vireo cassinii*). Single individuals on 22 Sep 2001 and 20 Oct 2010. There is only one previous fall record for Santa Barbara Island.

Blue-headed Vireo (*Vireo solitarius*). Single individuals on 25 Sep 2009 and 16–17 Sep 2011 (ph.) are the only ones recorded on Santa Barbara Island. Both records have been accepted by the CBRC (Pyle et al. 2011, www.californiabirds.org).

Warbling Vireo (*Vireo gilvus*). Single individuals on 18 Sep 2011, 20–21 Oct, and 25 Oct 2011, two on 17 Sep 2006, four on 25 Sept 2010, up to five from 12 to 14 Sep 2008, and seven on 17 Sep 2011. Surprisingly, there are only eight other fall records from Santa Barbara Island.

Red-eyed Vireo (*Vireo olivaceus*). One on 17 Sep 2011 is one of only two recorded from Santa Barbara Island in fall.

Common Raven (*Corvus corax*). One on 15 Sep 2007, to our knowledge the only one recorded on Santa Barbara Island since 1982. The raven is a common resident on the other Channel Islands and formerly was also common on Santa Barbara Island, when the island was used as a ranch.

Horned Lark (*Eremophila alpestris*). Not formally counted. Common resident breeder seen daily, with a maximum of 200 on 12 Oct 2007.

Purple Martin (*Progne subis*). Single female or immature seen on 21 Sep 2002, the only one recorded on the island in fall and one of only five at any season.

Tree Swallow (*Tachycineta bicolor*). Single individuals observed on 14 Oct 2007, 14 Sep 2008, 24 Oct 2008, and 20 Oct 2011; up to two seen from 27 to 29 Oct 2008. These are the only fall records for Santa Barbara Island.

Violet-green Swallow (*Tachycineta thalassina*). Nine observed on 20 Oct 2011; two remained to 21 Oct 2011. These are the only fall records for Santa Barbara Island.

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*). Single individuals seen on 20 Sep 2002 and 14 Sep 2008; two seen on 12 Sep 2008. These are the only fall records for Santa Barbara Island.

Barn Swallow (*Hirundo rustica*). Single individuals on 13 Sep 2008, 25 Sep 2010, and 17 Sep 2011, up to two 23–25 Sep 2005 and 20–25 Oct 2011, and three on 22 Sep 2001 and 16 Sep 2006. There are only two other fall records for Santa Barbara Island, which in general appears to be poor for migrant swallows.

Red-breasted Nuthatch (*Sitta canadensis*). Single birds on 14 Sep 2008, 24 and 25 (different individuals) Sep 2010, two on 23 Oct 2010, and four on 22 Oct 2010. These are the only fall records for Santa Barbara Island.

Brown Creeper (*Certhia americana*). One seen on 21 Oct 2008 represents the only fall record for Santa Barbara Island.

Rock Wren (*Salpinctes obsoletus*). Not formally counted, but recorded almost daily, with a high count of 12. This species is a resident breeder around the cliffs.

Bewick's Wren (*Thryomanes bewickii*). One on 18 Sep 2011, the fourth and earliest recorded on Santa Barbara Island in fall.

House Wren (*Troglodytes aedon).* Recorded almost daily from 21 Aug to 29 Oct, with a high count of 14 on 25 Sep 2010. This species favors the canyons more than most other migrants.

Pacific Wren (*Troglodytes pacificus*). One on 17 Sep 2006. The distinctive vocalizations were heard, eliminating the recently split Winter Wren (*T. hiemalis*). This is one of only three Santa Barbara Island records of this species, which is most common on Santa Cruz Island, rare on the southern Channel Islands, and unrecorded on San Clemente Island.

Figure 1. Santa Barbara Island from the east, showing the steep rocky foreshore and barren terrain.

Photo by Laurie Harvey

Golden-crowned Kinglet (*Regulus satrapa*). One on 14 Oct 2007. There are only four fall and two spring records for Santa Barbara Island.

Ruby-crowned Kinglet (*Regulus calendula*). Recorded regularly 16 Sep–26 Oct. This species is infrequent prior to the last week of September but common in October, when present almost daily, with a maximum count of seven on 21 Oct 2011.

Blue-gray Gnatcatcher (*Polioptila caerulea*). Single individuals 23–24 Sep 2005, 12–14 Sep 2008, and 14–16 Oct 2009, and two daily 16–18 Sep 2011. These records are consistent with Garrett and Dunn's (1984) statement that the species is an uncommon transient through the Channel Islands and a rare breeder on Santa Cruz and possibly Santa Catalina islands.

Swainson's Thrush (*Catharus ustulatus*). Recorded regularly 12 Sep–25 Oct, although less frequently in October than in September. Usually two to eight birds noted per day, but on 14 Sep 2008 we counted about 25, many of which we saw departing the island shortly after dawn. These records include the latest date and highest daily count for Santa Barbara Island in fall. This species is a common nocturnal migrant over the island, most frequently heard calling just before dawn. Because of the sparseness of vegetative cover, we are certain that the vast majority of these migrants pass over Santa Barbara Island without stopping. Grounded birds are commoner than on the mainland coast of Santa Barbara County, where the species is rare to uncommon in fall (Lehman 1994), or of Orange County, where daily counts in fall seldom exceed six (B. E. Daniels pers. comm.). With daily counts in mid-September as high as 30 and 35, numbers on Point Loma in San Diego County (R. E. Webster fide P. Unitt) are exceptionally as high as those on Santa Barbara and San Clemente islands.

Hermit Thrush (*Catharus guttatus*). Recorded regularly 16 Sep–29 Oct. This species has proven infrequent during September but is often common in October, when seen almost daily. High counts are 12+ on 21 Oct 2011, 18+ on 22 Oct 2010, and 23+ on 16 Oct 2009. Our record for 16 Sep 2007 is very early for coastal southern California. For comparison, Sullivan and Kershner (2005) listed 18 Sep as the earliest date for San Clemente Island and Hamilton and Willick (1996) 20 Sep as that for Orange County.

Northern Mockingbird (*Mimus polyglottos*). Single birds recorded on 22 Sep 2001, 17 Sep 2006, 14 Oct 2007, 12 Sep 2008, 26–27 Sep 2009, 15 Oct 2009, 24

Figure 2. Map of Santa Barbara Island showing the principal locations for migrating birds.

and 26 (different individuals) Sep 2010, and 17 Sep 2011. This species is a resident breeder on the larger Channel Islands.

Sage Thrasher (*Oreoscoptes montanus*). Recorded fairly regularly from 12 Sep to 27 Oct, with a high count of up to three on 13 and 14 Sep 2008. From 1974 through 2011, Santa Barbara Island had 29 fall records of the Sage Thrasher from 10 Aug to 4 Nov, with a high count of four on 21 Sep 1978. This species is a very rare fall migrant in Santa Barbara County (Lehman 1994) and rare migrant in coastal San Diego County (Unitt 2004). Hamilton and Willick (1996) noted only two fall records for Orange County. However, Garrett and Dunn (1981) noted that this species is commoner on the Channel Islands than on the nearby coast of the southern

Figure 3. The scattered patches of Giant Buckwheat and long strip of Giant Coreopsis (the start of which can be seen in the background) at the summit of North Peak constitute Santa Barbara Island's most productive location for migrants.

Photo by Peter Gaede

California mainland, and Sullivan and Kershner (2005) also noted that it is much more frequent on San Clemente Island than on the nearby mainland. It appears that the Sage Thrasher's movement through Santa Barbara Island peaks in September rather than during October and November as it does on San Clemente Island.

European Starling (*Sturnus vulgaris*). One on 29 Oct 2008, up to four 19–25 Oct 2011, five 14–16 Sep 2007, and six 12–14 Oct 2007. This species was much more common on Santa Barbara Island during the 1970s and 1980s, when it bred locally. It has declined throughout the northern Channel Islands in recent decades, coinciding both with the widespread return of nesting Peregrine Falcons and the removal of many old buildings that served as nesting sites. It continues to breed commonly on San Nicolas, Santa Catalina, and San Clemente islands, where the Peregrine Falcon is only now beginning to establish resident breeding populations and where there are the man-made habitats (planted trees and buildings) that the starling prefers.

Red-throated Pipit (*Anthus cervinus*). Single individuals were seen and heard flying over the island on 21 and 25 Oct 2008, which was a minor invasion year for this species in California. These are the island's only records of the Red-throated Pipit.

American Pipit (*Anthus rubescens*). In September, single individuals on 17 Sep 2011 and 23 Sep 2001 only, but regularly noted in October, with a maximum of 19 on 23 Oct 2008. This species is seen mostly in flight, making it difficult to judge whether birds are different or seen repeatedly. We suspect the former is more likely, as we have seen few pipits on the ground.

Sprague's Pipit (*Anthus spragueii*). One seen 24 Sep 2005 (Iliff et al. 2007), another 21 Oct 2008 (Pike and Compton 2010). These are the only CBRC-validated records of Sprague's Pipit for the Channel Islands.

Figure 4. The canyons on the east side have Santa Barbara Island's most extensive stands of taller vegetation, primarily Giant Coreopsis and prickly-pear cacti, but they typically attract only low numbers of migrants.

Photo by Peter Gaede

Cedar Waxwing (*Bombycilla cedrorum*). Single individuals on 13 Oct 2007 and 24–25 Oct 2008, and up to 23 (on 21 Oct) from 20 to 25 Oct 2011. There is only one additional fall record for Santa Barbara Island.

Lapland Longspur (*Calcarius lapponicus*). Two on 21 Oct 2008. Present daily from 20 to 24 Oct 2010 (ph.), with a maximum of 4+ on 23 Oct 2010. Noted 19–25 Oct 2011 with a maximum of three on 24 Oct 2011 (ph.). There is only one other fall record for Santa Barbara Island.

Chestnut-collared Longspur (*Calcarius ornatus*). Single individuals on 15 Oct 2009 and 20–24 Oct 2010, and three 21–24 Oct 2011. There are only two other fall records for Santa Barbara Island.

Ovenbird (*Seiurus aurocapilla*). Single individuals seen 22–23 Sep 2001, 20 Sep 2002, 14 Sep 2008 (ph.), and 21 Oct 2011, and up to two birds 16–18 Sep 2011 (ph.). There are only two other fall records for Santa Barbara Island.

Golden-winged Warbler (*Vermivora chrysoptera*). One seen 20–21 Oct 2010 (ph.) is the only Golden-winged Warbler recorded from Santa Barbara Island. This record is accepted as CBRC 2010-181 (www.californiabirds.org). The only other accepted record from the Channel Islands is of one seen on San Nicolas Island 4 Jun 1977 (Binford 1983).

Black-and-white Warbler (*Mniotilta varia).* One immature female on 18 Sep 2011; one immature male on 24 Oct 2011 (ph.). There are three other fall records for Santa Barbara Island from 3 to 26 Oct.

Tennessee Warbler (*Oreothlypis peregrina*). Single individuals on 23 Sep 2005, 12 Sep 2008, 17 Sep 2011, and 20 Oct 2011, and two birds on 13 Sep 2008. There are only two other fall records for Santa Barbara Island.

Figure 5. The Gray Vireo is exceptionally rare in coastal California, where it is most frequent on the Channel Islands between early and late September. These photos document the first record of this species for Santa Barbara Island.

Photos by Peter Gaede

Orange-crowned Warbler (*Oreothlypis celata*). Recorded almost daily 12 Sep–28 Oct. Typically, one to 10 birds present, but at least 40 recorded 17 Sep 2006. This species is typically the most common warbler on Santa Barbara Island prior to the arrival of Yellow-rumped Warblers in October. Although we have not studied the birds' subspecific identifications, it is clear from collected specimens that most Orange-crowned Warblers stopping on Santa Barbara Island do not belong to *O. c. sordida*, the dark subspecies that breeds throughout the Channel Islands.

Nashville Warbler (*Oreothlypis ruficapilla*). Single individuals on 21 and 22 Sep 2001 (probably different), 16 Sep 2006, 12–14 Sep 2008, and 16 Oct 2009, and up to four (on 20 Oct) from 20 to 25 Oct 2011.

Virginia's Warbler (*Oreothlypis virginiae*). One seen on 14 Sep 2008 is the earliest of the five recorded on Santa Barbara Island in fall.

MacGillivray's Warbler (*Geothlypis tolmiei*). Single individuals seen on 15 Sep 2007, 13 Oct 2007, and 25 Sep 2010, up to two 13–14 Sep 2008, and up to three 16–18 Sep 2011.

Common Yellowthroat (*Geothlypis trichas*). Recorded fairly regularly between 13 Sep and 25 Oct. Commoner in October, with high counts of up to six 20–23 Oct 2010 and 20–25 Oct 2011.

American Redstart (*Setophaga ruticilla*). Single individuals seen 23–25 Sep 2005, 25 Sep 2010, 20–23 Oct 2010 (ph.), and 24 Oct 2011 (adult male, ph.), a total of five, including an adult male, 12–14 Sep 2008 (ph.), and a total of seven, including an adult male, 16–17 Sep 2011 (ph.). High count of five on 16 Sep 2011. These records include the highest count and latest fall date for Santa Barbara Island.

Cape May Warbler (*Setophaga tigrina*). An immature male around the nursery and east coast canyon area 22–25 Oct 2011 (ph.) is the only Cape May Warbler recorded for Santa Barbara Island in fall and is accepted by the CBRC (www.californiabirds.org). On 24 Oct 2011, the same or another was seen in a mixed flock of warblers, including several newly arrived eastern vagrants, at the North Peak

coreopsis patch. It seems possible that this was a second bird, but comparison of photographs was inconclusive.

Northern Parula (*Setophaga americana*). One, the only one recorded on Santa Barbara Island in fall, seen on 17 Sep 2011.

Magnolia Warbler (*Setophaga magnolia*). Single individuals seen on 16 Sep 2006, 20–21 Oct 2008 (ph.), and 17 Sep 2011.

Bay-breasted Warbler (*Setophaga castanea*). Single individuals seen 21–22 Sep 2002 (ph.) and 22 Oct 2008 provide the only fall records for Santa Barbara Island.

Blackburnian Warbler (*Setophaga fusca*). One seen on 24 Sep 2010 is the first recorded on the island in fall.

Yellow Warbler (*Setophaga petechia*). Recorded regularly from 12 Sep to 25 Oct. Typically we saw one to three birds daily but recorded up to 10 from 12 to 14 Sep 2008 and up to eight from 16 to 18 Sep 2011.

Chestnut-sided Warbler (*Setophaga pensylvanica*). Single immatures seen on 13 Sep 2008 (ph.), 17 Sep 2011 (ph., Figure 6), and 21 Oct 2011. There is only one other fall record for Santa Barbara Island.

Blackpoll Warbler (*Setophaga striata*). Single individuals seen on 14 Sep 2008, 25 Sep 2009, and 20–23 Oct 2010; two present on 17 Sep 2011 (ph.).

Black-throated Blue Warbler (*Setophaga caerulescens*). Single males on 20 Oct (ph.) and 25 Oct 2011 (ph.), the only ones recorded on the island.

Figure 6. In September, blooming Giant Buckwheats attract large numbers of insects and act as a magnet for migrant warblers, such as the Chestnut-sided and Wilson's Warblers foraging on this buckwheat.

Photo by Peter Gaede

Palm Warbler (*Setophaga palmarum*). Different individuals seen on 14 Oct 2007, 21, 24, and 25 Oct 2008 (ph.), up to two 20–24 Oct 2010, one 18 Sep 2011 (ph.), and up to five (on 25 Oct 2011) 19–25 Oct 2011 (ph.).

Yellow-rumped Warbler (*Setophaga coronata*). Recorded regularly 16 Sep–29 Oct. This species does not typically arrive until late September but is present daily in October, with an island-wide high estimate of 60 on 20 Oct 2011. This species is very mobile and is also often seen flying over, making accurate counts difficult. We did not systematically record the subspecies. The vast majority of birds seen were *S. c. auduboni*, although we observed a few of *S. c. coronata.*

Yellow-throated Warbler (*Setophaga dominica*). One on 19 Oct 2011 (ph., Figure 7) was the second recorded for Santa Barbara Island, the first in fall, and one of only five in fall for the Channel Islands as a whole. This record has been accepted by the CBRC (www.californiabirds.org).

Prairie Warbler (*Setophaga discolor*). Single individuals seen on 12 Oct 2007 and 14 Sep 2008. There is only one other Santa Barbara Island record.

Black-throated Gray Warbler (*Setophaga nigrescens*). Recorded fairly regularly 13 Sep–25 Oct, with a high count of four on 16 Sep 2011.

Townsend's Warbler (*Setophaga townsendi*). Single individuals seen 22 Sep 2001 and 17 Sep 2006, up to two 20–25 Oct 2011, up to three 12–14 Sep 2008, and up to four 16–17 Sep 2011. This species' scarcity on Santa Barbara Island is surprising, as Townsend's Warbler is one of the commonest migrant warblers along the mainland coast of southern California. Consideration of all the historical records for the island also shows this species as being less common than the Black-throated Gray Warbler, which is less common as a fall migrant along the mainland coast.

Figure 7. Yellow-throated Warbler, Santa Barbara Island, 19 October 2011.

Photo by Wes Fritz

Hermit Warbler (*Setophaga occidentalis*). Single individuals seen on 20 Sep 2002 and 15 Sep 2006, two on 16 Sep 2011. These represent three of only six fall records for Santa Barbara Island.

Canada Warbler (*Cardellina canadensis*). Different individuals seen on 20 Sep and 21 Sep (ph.) 2002, one on 13 Sep 2008 (ph.), and one on 21 Oct 2008 (ph.). These represent the only records for Santa Barbara Island.

Wilson's Warbler (*Cardellina pusilla*). Recorded fairly regularly 12 Sep–25 Oct. One to five birds typically noted daily, but up to ten seen from 12 to 14 Sep 2008 and up to 14 from 16 to 18 Sep 2011. This species is markedly more frequent in September than in October.

Yellow-breasted Chat (*Icteria virens*). Two each seen on 13 Sep 2008 (ph.) and 24 Sep 2010. There are only two other fall records for Santa Barbara Island.

Green-tailed Towhee (*Pipilo chlorurus*). Single individuals seen on 15 Sep 2007, 14 Oct 2007, and 20–25 Oct 2011 (ph.), five seen 25–27 Sep 2009 (high count of four on 27 Sep), and at least seven birds present 25–26 Sep 2010 (high count of six on 25 Sep). From 1974 through 2011, this species was observed on Santa Barbara Island on 20 separate days between 12 Sep and 23 Oct. Six on 25 Sep 2010 is the highest single-day total for any of the Channel Islands. The Green-tailed Towhee is a rare regular migrant along the coast of mainland southern California, but records are almost invariably of single birds (e.g., Unitt 2004). Thus the notably high counts on Santa Barbara Island support the suggestion by Garrett and Dunn (1981) that the Green-tailed Towhee is a disproportionately frequent fall migrant to the Channel Islands, in comparison to its status on the nearby mainland, yet Sullivan and Kershner (2005) commented that it has been recorded only singly on San Clemente Island. It seems likely that the small size of Santa Barbara Island concentrates this species and other rare migrant sparrows.

Spotted Towhee (*Pipilo maculatus*). Recorded fairly regularly 13 Sep–25 Oct, with daily maxima of four on 17 Sep 2006 and 16 Oct 2009 and eight on 22 Oct 2010.

Chipping Sparrow (*Spizella passerina*). Recorded almost daily 21 Aug–29 Oct, with a high count of 20 on 21 Sep 2002. It is common on Santa Barbara Island to see mixed *Spizella* flocks containing Chipping, Clay-colored, and Brewer's Sparrows.

Clay-colored Sparrow (*Spizella pallida*). Recorded fairly regularly from 16 Sep to 27 Oct, with high counts of four on 20 Oct 2011 and five on 17 Sep 2011. Although this species is one of the most frequent fall vagrants to the coast of southern California, it is even more frequent, proportionately, on Santa Barbara Island.

Brewer's Sparrow (*Spizella breweri*). Recorded regularly 12 Sep–25 Oct. Typically one to four birds are present on any given day, but exceptionally there were up to 20 from 12 to 14 Sep 2008 and up to eight from 17 to 18 Sep 2011. The count in Sep 2008 is the highest in fall for the Channel Islands and much higher than any for the mainland coast, where records typically involve just one or two birds. Sullivan and Kershner (2005) noted only ten fall records each of the Brewer's and Clay-colored, so both species, especially Brewer's, appear to be commoner on Santa Barbara Island. On San Clemente Island, however, desert scrub habitat is rarely checked for migrants (B. Sullivan pers. comm.), so the occurrence of Brewer's there may be underestimated.

Black-chinned Sparrow (*Spizella atrogularis*). Single individuals seen on 13 Sep 2008 (ph.) and 25 Sep 2010 represent the only fall records for Santa Barbara Island. This species is a casual migrant along the mainland coast. Hamilton and Willick (1996) listed no coastal fall migrants for Orange County, and Lehman (1994) and Unitt (2004) listed just two or three such records each for Santa Barbara and San Diego counties. Richardson et al. (2003) listed only two from Southeast Farallon Island, on 30 Aug and 13 Sep. There are eight other Channel Island records between 21 Aug and 28

Sep. Two much later records from San Clemente Island in mid-November and early December are perhaps better regarded as representing birds attempting to winter, as the limited data indicate that this species is a rather early fall migrant, peaking between mid-August and mid-September.

Vesper Sparrow (*Pooecetes gramineus*). Recorded regularly 12 Sep–25 Oct, with high counts of six on 21 Sep 2002 and 17 Sep 2011.

Lark Sparrow (*Chondestes grammacus*). Recorded fairly regularly (typically one to three birds per day) from 13 Sep to 27 Oct. Most common in September, with a high count of seven on 18 Sep 2011.

Black-throated Sparrow (*Amphispiza bilineata*). Single juveniles seen on 20 Sep 2002, 23–25 Sep 2005, and 17–18 Sep 2011 (ph.), and up to four (all juveniles) 12–14 Sep 2008 (ph.). From 1973 through 2011, Santa Barbara Island had seven fall records, one of five birds on 12 Sep 1976. A record of a juvenile on 23 Jun 1973 also represents postbreeding dispersal. This species appears to be more frequent on Santa Barbara Island than on the mainland coast, where it is a very rare migrant with birds occurring singly (Garrett and Dunn 1981, Lehman 1994, Hamilton and Willick 1996, Unitt 2004).

Sage Sparrow (*Amphispiza belli*). One *A. b. belli* was closely observed for several minutes on North Peak on 23 Sep 2001. The dark, unstreaked mantle and well-defined malar stripe characterizing *belli* were seen well. This record is surprising as that subspecies is essentially sedentary (Garrett and Dunn 1981, Lehman 1994, Unitt 2004). Some birds may make limited altitudinal movements after breeding, and both Unitt (2004) and Hamilton and Willick (1996) noted a few instances of individuals that must have wandered at least a few kilometers away from breeding habitat. The bird seen on Santa Barbara Island was over 60 km from the nearest mainland breeding habitat. But the population resident on San Clemente Island suggests that this subspecies is capable of offshore dispersal, as that island has always been isolated from the mainland. There are several other fall records of the Sage Sparrow from Santa Barbara Island, one of multiple birds 19–21 Sep 1978. Unfortunately, their subspecies was not noted.

Lark Bunting (*Calamospiza melanocorys*). One on 18 Sep 2011 (ph.), fewer than expected given there are four previous fall records and the species is a rare but regular fall migrant on San Clemente Island (Sullivan and Kershner 2005).

Savannah Sparrow (*Passerculus sandwichensis*). Recorded almost daily 12 Sep–29 Oct. Usually between one and five seen during most September visits, but up to 25 observed from 12 to 14 Sep 2008. Larger numbers occur in October, with at least 60 counted on 12 Oct 2007 and 30 on 25 Oct 2008. Single Large-billed Savannah Sparrows (*P. s. rostratus*) were seen on 22 Sep 2001, 16 Sep 2006, 16 Sep 2007, 25 Oct 2008, 15 Oct 2009, and 25 Sep 2010, all on the flat bench on the northwest side of the island, which has many *Suaeda* bushes. These are the island's only records of *rostratus*.

Grasshopper Sparrow (*Ammodramus savannarum*). Single individuals on 20 Sep 2002, 23 Oct 2010 (ph.), and 21–22 Oct 2011. There is only one other fall record for Santa Barbara Island.

Fox Sparrow (*Passerella iliaca*). Recorded fairly regularly from 17 Sep to 29 Oct. Although the subspecies are not always identifiable in the field, we present the records by subspecies groups. Single birds observed 21–23 Oct 2010 (ph.) and 21 Oct 2011 showed two wing-bars and some faint mantle streaking so represented either subspecies *zaboria* or, more likely, *altivagans*. Slate-colored Fox Sparrows (*schistacea* group; back gray, spots on underparts black, bill small) recorded on seven dates

between 14 and 25 Oct 2008, with a high count of six on 21 Oct 2011. Thick-billed Fox Sparrows (*megarhyncha* group; back gray, spots on underparts black, bill larger, distinctive call like that of a California Towhee, *Melozone crissalis*) recorded on 14 dates between 13 Sep and 22 Oct. Typically one to three birds noted but at least ten were present on 17 Sep 2006. Sooty Fox Sparrows (*unalaschcensis* group; back and spots on underparts brown, mandible yellow basally) recorded regularly between 14 and 29 Oct, with a high count of three on 16 Oct 2009 and 21 Oct 2010. One early arrival on 25 Sep 2005. Clearly, Thick-billed Fox Sparrows arrive earlier than do the other subspecies.

Lincoln's Sparrow (*Melospiza lincolnii*). Recorded regularly from 13 Sep to 21 Oct, with high counts of four 13–14 Sep 2008 and six 21–22 Oct 2010.

Song Sparrow (*Melospiza melodia*). Single individuals seen on 23 Oct 2010 and 17 Sep 2011 appeared to be of the coastal southern California subspecies *M. m. heermanni* or the Channel Island subspecies *M. m. graminea*, on the basis of their small size and dark upperparts with contrasting rich reddish wing coverts, distinctly gray face, and sharp blackish streaking below contrasting markedly with the white underparts. These represent the only fall records for Santa Barbara Island since 1988. The formerly resident population of *M. m. graminea* (type locality Santa Barbara Island) was extirpated some time between 1959 and 1972. Patten and Pruett (2009) synonymized the subspecies described from the other Channel Islands with *graminea*.

White-throated Sparrow (*Zonotrichia albicollis*). Single individuals on 16 Oct 2009 and 22 Oct 2010 (ph.) and two 20–21 Oct 2011 (ph.). There are three other fall records for Santa Barbara Island.

White-crowned Sparrow (*Zonotrichia leucophrys*). Recorded regularly from 16 Sep to 29 Oct, although much less frequent in September. High counts are of 120+ on 12 Oct 2007 and 180 on 16 Oct 2009. To date, we have noted only subspecies *gambelii*.

Golden-crowned Sparrow (*Zonotrichia atricapilla*). Recorded fairly regularly from 12 to 24 Oct. Typically one to three birds present; the high count is of five on 20 Oct 2011.

Dark-eyed Junco (*Junco hyemalis*). Recorded almost daily from 12 to 28 Oct. The high count was 15 on 25 Oct 2011. An early arrival was seen on 21 Sep 2003. All birds were Oregon Juncos except for a single female Slate-colored Junco on 14 Oct 2007 and a hybrid Pink-sided × Gray-headed Junco on 21 Oct 2011 (ph.). This latter bird was identified by the combination of features typical of the Pink-sided with a bright reddish-brown back as described by Hamilton and Gaede (2005).

Summer Tanager (*Piranga rubra*). Single females seen 25–26 Sep 2009 and 20 Oct 2011 (ph.) provide the only fall records for Santa Barbara Island.

Scarlet Tanager (*Piranga olivacea*). A single male seen on 23 Oct 2008 (ph.) is the only Scarlet Tanager recorded for Santa Barbara Island.

Western Tanager (*Piranga ludoviciana*). Recorded fairly regularly from 21 Aug to 23 Oct, with high counts of eight on both 17 Sep 2006 and 17 Sep 2011.

Black-headed Grosbeak (*Pheucticus melanocephalus*). Single individuals on 17 Sep 2006, 15 Sep 2007, 12–13 Sep 2008, and 22 Oct 2010, and four from 16 to 18 Sep 2011. This species is a common migrant on the mainland coast and is also regular on San Clemente Island (Sullivan and Kershner 2005). The reasons for its comparative scarcity on Santa Barbara Island are unclear. The complete absence of Rose-breasted Grosbeaks (*P. ludovicianus*) during our visits was also somewhat

surprising as that species is one of the more regular eastern vagrants to coastal California, and at least 17 have been noted in fall on San Clemente Island (Sullivan and Kershner 2005).

Blue Grosbeak (*Passerina caerulea*). Single individuals 13–14 Sep 2008 and on 24 Sep 2010. There are only two other fall records for Santa Barbara Island.

Lazuli Bunting (*Passerina amoena*). Recorded regularly from 12 to 25 Sep. One to three birds are typically noted, but up to eight were present 16–18 Sep 2011. The earliest fall record for Santa Barbara Island is of two birds seen on 16 Aug 2010.

Indigo Bunting (*Passerina cyanea*). Single individuals on 13 Sep 2008, 25–27 Sep 2009, and 20–21 Oct 2011 (ph.). There are only two other fall records for Santa Barbara Island.

Painted Bunting (*Passerina ciris*). Single juveniles seen on 13 Sep 2008 (ph.) and 18 Sep 2011 are the first recorded on Santa Barbara Island.

Dickcissel (*Spiza americana*). Single individuals seen on 13 Sep 2008 and 17 Sep 2011 and two on 14 Sep 2008 (ph.). One 19–21 Oct 2011 represents a relatively late record for California. For example, of 48 fall records for Santa Barbara County from 1971 to 2010 (P. E. Lehman unpubl. data), only three are later than 21 Oct. There are two other fall records for Santa Barbara Island, both in mid-September.

Bobolink (*Dolichonyx oryzivorus*). One on 23 Oct 2010 (ph.), two on 16 Sep 2006, and up to two 13–14 Sep 2008 (ph.). The 23 Oct 2010 record represents the latest fall date for Santa Barbara Island and is quite late, although not exceptionally so, for California.

Red-winged Blackbird (*Agelaius phoeniceus*). Single individuals on 22 Sep 2001, 13–14 Oct 2007, 25 Oct 2008, and 16 Oct 2009, and two birds present 20–25 Oct 2011. There are only two other fall records for Santa Barbara Island.

Western Meadowlark (*Sturnella neglecta*). Not formally counted. Common resident breeder with a maximum of 150 estimated 20–29 Oct 2008.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*). Three on 18 Sep 2011 (ph.) and one 21–22 Oct 2011 (ph.).

Brewer's Blackbird (*Euphagus cyanocephalus*). Recorded regularly 14–29 Oct, with a high count of eight on 20 Oct 2011. In addition, we recorded one 20–22 Sep 2002 and one on 23 Sep 2005.

Brown-headed Cowbird (*Molothrus ater*). Recorded almost daily from 12 Sep to 25 Oct. High counts are of 25 on 21 Oct 2011, 30 on 13 Sep 2008, and 30 on 17 and 18 Sep 2011.

Orchard Oriole (*Icterus spurius*). One immature 21–22 Sep 2001, the first recorded on Santa Barbara Island.

Hooded Oriole (*Icterus cucullatus*). Single individuals 25 Sep 2010 and 22 Aug 2011, up to four seen 12–14 Sep 2008, and up to five 16–18 Sep 2011. This last is the highest count for Santa Barbara Island. All birds observed have been immatures or females.

Bullock's Oriole (*Icterus bullockii*). Different individuals 17 and 18 Sep 2011, and up to four immatures 12–14 Sep 2008. Bullock's Oriole is a common migrant on the mainland coast and San Clemente Island (Sullivan and Kershner 2005). The reasons for its comparative rarity on Santa Barbara Island are unclear.

Baltimore Oriole (*Icterus galbula*). Single immature males on 15 Oct 2009 and 22 Oct 2011 (ph.), the only Baltimore Orioles recorded on Santa Barbara Island in fall.

Purple Finch (*Carpodacus purpureus*). A single female heard and seen on 21 Oct 2011 (ph.) was the first recorded on Santa Barbara Island in fall.

House Finch (*Carpodacus mexicanus*). Recorded fairly regularly from 15 Sep to 27 Oct, but no evidence of a resident or breeding population. High count of 12 on 21 Oct 2008. The lack of a resident population and occurrence of many of these birds with large numbers of migrants suggests that they originated from the mainland and do not represent the purported endemic southern Channel Islands race *C. m. clementis*, which is alleged to have bred on Santa Barbara Island in the past (AOU 1957).

Red Crossbill (*Loxia curvirostra*). One on 19 Oct 2011 was the first recorded on Santa Barbara Island. This species has been reported from only four of the Channel Islands.

Pine Siskin (*Carduelis pinus*). Single individuals heard on 14 Oct 2007 and 21 Oct 2011, and one seen and heard on 24 Oct 2010. All birds were passing over the island. There are only two other fall records for Santa Barbara Island.

Lawrence's Goldfinch (*Carduelis lawrencei*). Single individuals seen on 13 Oct 2007 and 24–25 Oct 2008, and one heard flying over on 16 Oct 2009. There are only two other fall records for Santa Barbara Island.

Lesser Goldfinch (*Carduelis psaltria*). Recorded regularly from 12 Sep to 27 Oct with most sightings of one to three birds. Up to 12 noted on 14 Oct 2007, up to six from 23 to 25 Sep 2005, and up to nine from 16 to 18 Sep 2011.

American Goldfinch (*Carduelis tristis*). At least two seen on 14 Oct 2007, representing the only fall record for Santa Barbara Island.

THE RELATIONSHIP BETWEEN WEATHER CONDITIONS AND ARRIVALS OF MIGRANTS

During our study, we identified four primary weather patterns:

- **Northwest winds**: Moderate (8–25 km/hr) or occasionally stronger northwesterly winds with low fog or clear skies. If it is clear, other islands and the mainland are visible. In low fog, much of the island is invisible, although there is often a partially clear area about a mile or so out to the sea on the east side.
- **Santa Ana winds**: When a Santa Ana condition brings offshore winds to the mainland of southern California, the island itself is windless, becoming warm in the afternoon. The surrounding islands and mainland are all clearly visible.
- **Marine layer**: Calm or light winds and continuous low cloud cover that reaches to the mainland, where it generally penetrates only the coastal lowland. Most frequently the cloud layer is at an elevation of 300–500 m. During such conditions, the island is usually visible from about 15 km away (as confirmed by observations from incoming boats), but the other islands are not visible from Santa Barbara Island. We have occasionally encountered a higher marine layer with an elevation of around 1000 m when it is possible to see Santa Catalina Island or even the lights of the mainland. Possibly because the peaks on Santa Barbara Island are relatively low, we have not observed the top of the island rising above a low-level marine layer. Our use of the term marine layer does not include low fog banks that obscure the island completely.

- **Overcast with variable precipitation**: Frontal systems bringing variably low but continuous cloud cover and occasional to prolonged periods of light rain. The wind is very light to light, becoming occasionally stronger during squalls, and varies from southeasterly to southwesterly in direction. Under such conditions, the island may be visible from as little as 2 km away to as far away as at least 36 km (with Santa Catalina Island visible). We have experienced these conditions just three times, all during mid-October: 13 Oct 2007, 14 Oct 2009, and 20–23 Oct 2010. An important distinction between this condition and the marine layer is that the cloud cover typically extends over much of mainland California rather than just over the coastal lowlands.

There was a clear association between certain weather patterns and the number and variety of migrants on Santa Barbara Island. Tables 2 and 3 illustrate several examples under different conditions in September and October, respectively, and demonstrate several key points:

- Persistent periods of northwest winds are poor for both variety and number of migrants;
- Both the marine layer and Santa Ana winds consistently result in arrivals of migrants;
- The effect of overcast with variable precipitation on migrants' arrivals is highly variable;
- In both September and October the greatest variety of migrants occurs under heavy overcast (marine layer or overcast with variable precipitation); and
- In October, Santa Ana winds can produce total numbers of migrants similar to those of the best conditions of marine layer or overcast with variable precipitation.

We report details of all three instances of overcast with variable precipitation because during the fall migration such conditions are relatively rare this far south in California. For example, B. L. Sullivan (pers. comm.) did not recall experiencing them during the four years he spent on San Clemente Island, which is little more than 60 km to the south of Santa Barbara Island. The October data do not demonstrate such a wide difference between northwest winds and the other conditions as shown by the September data. This is because large numbers of White-crowned and Savannah Sparrows, both of which winter on the Channel Islands, may remain for some days. The presence of these flocks often results in much higher totals of migrants being present on days of northwest winds, even though few new birds are actually arriving.

DISCUSSION

Effects of Weather on Arrivals of Migrants

The relationship between weather conditions and the arrival and departure of migrants has been studied in considerable detail at Southeast Farallon Island, farther north off the coast of California (Pyle et al. 1993). Those researchers found that the most important factors causing large

numbers of arrivals were continuous cloud cover, light southerly or no wind, and moderately low visibility of 5 to 15 km. They concluded that the continuous cloud cover and associated reduced visibility caused migrants to stray out over the ocean and subsequently prevented them from finding the mainland coast, thus forcing them to take advantage of any land they could find. However, Pyle et al. (1993) also noted that moderate numbers of migrants also arrived under clear skies when the wind blew offshore and presumably drifted migrants (especially diurnal migrants) over the ocean. Extremely low visibility, resulting from dense fog, had a major negative effect on arrivals, as birds presumably could not locate the island. In fall, the predominant weather pattern at Southeast Farallon, which features steady northwest winds, often combined with fog, is poor for arrival of migrants. Although days with rain were few, that condition's association with arrival of large numbers of migrants was negative. Departures were most strongly associated with clear weather and little or no wind. Because the conditions affecting migration are likely the same on Southeast Farallon and the nearby mainland, Pyle et al. (1993) suggested the immediate effect of the ocean on the weather is greater along the Pacific coast than elsewhere in North America. For example, it is common for continuous low clouds, the "marine layer," to form over the ocean and along the California coast while clear, calm conditions prevail inland. As a result, conditions that trigger a large number of birds to migrate, then cause them to become disoriented over the ocean and unable to locate the mainland, can coexist, allowing for large fallouts on isolated offshore islands. Such conditions are less frequent in other areas where migration has been studied, such as along the coasts of eastern North America or northwestern Europe, where cloud cover is not typically confined to coasts.

Although there has been no comparably detailed study of the association of weather conditions with migration in the Channel Islands, Sullivan and Kershner (2005) discussed this topic as it relates to San Clemente Island. They reported that light southeast winds and a "mid-level marine layer" produced the largest fallouts in spring and were also productive in fall. They also noted, however, that the largest number of arrivals in fall was associated with Santa Ana winds from the northeast. Because the coast of southern California is oriented northwest–southeast, Santa Ana winds create an offshore flow. Under such conditions, visibility is extremely good, with the mainland visible from 64 to 80 km away. Therefore, the largest numbers of fall migrants arrive on San Clemente Island under conditions quite different from those at Southeast Farallon, although it should be noted that Southeast Farallon does not typically experience offshore flows as strong as those that reach San Clemente Island and is considerably closer to the nearest point of the mainland.

We considered two hypotheses to explain why a greater variety of species generally reaches Santa Barbara Island under a marine layer or overcast with variable precipitation than during Santa Ana winds. One is that more species become disoriented under such conditions. The second is that certain species for which Santa Barbara Island lacks suitable habitat overfly the island when other land is clearly visible, as is the case during Santa Ana winds. To investigate these hypotheses further, we analyzed occurrences of vagrant

eastern wood-warblers in September under a marine layer and during Santa Ana winds. During September, 10 days of marine layer have produced a total of 36 eastern wood-warblers of 12 species whereas 7 days of Santa Ana winds have produced just 4 individuals of 4 species. In contrast, on San Clemente Island, eastern wood-warblers are frequent during Santa Ana winds with, for example, a remarkable 18 individuals of 5 species under such conditions on 11 October 2003 (Sullivan and Kershner 2005, B. L. Sullivan pers. comm.). San Clemente is a large island that offers some localized suitable habitat for warblers—water, limited riparian vegetation, and ornamental plantings—giving migrants less incentive to continue to the mainland. This difference between the two islands suggests that warblers simply choose not to make landfall on Santa Barbara Island when potentially more promising destinations are visible. The pattern of our data for eastern warblers in October is rather similar, with more frequent occurrences under a marine layer or overcast with variable precipitation that was effectively similar to a marine layer. Further corroborating the hypothesis that some species choose not to land or remain on the island under clear skies, we have on several occasions observed warblers fly to the summit of North Peak but either never land or land only briefly before continuing to fly toward Santa Catalina Island. The observations on Santa Barbara Island concur with those on Southeast Farallon, where arrivals of migrants diminish greatly when the mainland is visible. In comparison to that for warblers, Santa Barbara Island's habitat for sparrows is relatively attractive, so it is unsurprising that during October, when migration of many sparrows peaks, the number of arrivals during Santa Ana winds can equal that under optimal marine-layer conditions.

During the fall of 2011, we experienced at least two days in which the marine layer was sufficiently high for Santa Catalina Island to be visible from Santa Barbara Island, in one case completely visible. This did not appear to affect the variety and numbers of migrants arriving on Santa Barbara Island negatively and suggests that only truly clear skies cause large numbers of birds to bypass Santa Barbara Island. Possibly, under a marine layer, birds become more disoriented and have spent longer over the ocean by the time they reach Santa Barbara Island, resulting in them being too tired to continue. This hypothesis is supported by observations on both these two days that many birds were still arriving 3 hours or more after first light. During Santa Ana winds most birds apparently reach the island by or immediately after dawn, but further study is needed.

CONCLUSIONS

The small size, limited vegetative cover, and relative isolation of Santa Barbara Island combine to make this location well suited for gathering data on migrant birds and how their numbers fluctuate in relation to different weather conditions. On the basis of our observations, we draw these tentative conclusions about weather and migrants' arrivals on the Channel Islands:

- During northwest winds, as on Southeast Farallon Island, very few landbirds arrive. However, if the northwest winds are localized to the

vicinity of the islands, large numbers may still arrive if Santa Ana winds are prevailing along the mainland coast.

- The most suitable weather for arrival of fall migrants varies with the size and elevation of the island, its isolation from other islands and the mainland, and its habitats. It appears that a marine layer or similar overcast are the conditions best for causing the largest variety of migrant landbirds to be grounded on Santa Barbara Island. On larger islands such as San Clemente and San Nicolas, however, Santa Ana winds are best for large numbers of arrivals.
- On Santa Barbara Island, the largest fallouts of migrants in terms of total number of birds occur in October under a marine layer or during Santa Ana winds. These totals are driven by the large numbers of sparrows, especially under Santa Ana conditions.
- Overcast with variable precipitation has a variable effect on arrival of migrants, with some days being very good but others very poor. Possibly, the island may be visible only from a mile or so away during persistent rain, thus making it difficult for migrants to locate it. Also, such weather conditions may also be accompanied by widespread cloud cover and precipitation on the mainland of California, inhibiting migrants' departures and greatly reducing the number of birds aloft.

Our study provides support for earlier assertions that certain species breeding in inland mountains and deserts, such as the Sage Thrasher, Gray Vireo, and Green-tailed Towhee, occur more frequently on the Channel Islands than on the nearby mainland coast. As a result of our study, we can now add Brewer's Sparrow to this list, as we encountered numbers unprecedented for a coastal location. Conversely, several migrant species that are common on the mainland appear to be less so on Santa Barbara Island, such as swallows, Townsend's Warbler, and the Golden-crowned Sparrow. In addition to western breeding species, we recorded numerous vagrants originating from central and eastern North America.

While additional data for any period of the fall migration will have value, the greatest priority for future research should be given to periods not covered by our study. Evidently some migrants from the interior, such as the Black-chinned and Black-throated Sparrows, are most regular in late August and early September, and this is when many common migrant species first appear. Although our study addressed the period between mid-September and late October, there is a substantial gap from 29 September to 11 October, which is typically one of the most productive periods of fall migration, on the basis of records for San Clemente Island and the mainland coast of southern California. Visits from late October to mid-November would likely be productive for determining the peak migration period for species such as longspurs, sparrows, and blackbirds.

Further data on more regular migrants may indicate if any species are following a route directly across the Southern California Bight rather than along the mainland coast. Data from Santa Barbara Island may also be able to demonstrate more precise migration periods for species that are common residents on the mainland, such as Brewer's Blackbird, Spotted Towhee,

Song Sparrow, and Red-winged Blackbird, because there is no need to differentiate between residents and migrants. Further weather data and their correlation with arrivals of migrants are needed to clarify which species are associated most with particular atmospheric conditions.

ACKNOWLEDGMENTS

We owe a great deal of gratitude to National Park Service biologist Laurie Harvey for arranging off-trail access that enabled all important areas to be checked for migrants. Laurie also arranged additional access to the island with the Park Service's boat. Paige Martin, the Park Service's previous biologist on the island, also assisted with off-trail access during our initial visits. Kathryn McEachern provided information on the names of island's plants. Laurie Harvey, Linda Dye, and Rocky Rudolph of the National Park Service also provided the map and aerial photograph of the island. We also thank Howard Higley, Oscar Johnson, and Mike Powers for accompanying us on some of our visits and for contributing their observations. Brian Sullivan and Robb Hamilton provided valuable comparative data based on their observations from San Clemente and San Nicolas islands, respectively. Paul Lehman, especially, Dave Compton, Peter Pyle, and Brian Sullivan reviewed the manuscript and gave valuable input on improving the organization and content of the paper. Brian Daniels, Kimball Garrett, Paul Lehman, Curtis Marantz, Guy McCaskie, Joe Morlan, Jim Pike, and Brian Sullivan all contributed valuable commentary on the status of the Dusky Flycatcher along the mainland coast, whereas Dave Compton, Matt Heindel, Tony Leukering, and Steve Mlodinow offered expert opinion on still photos extracted from video of a Dusky Flycatcher.

LITERATURE CITED

American Ornithologists' Union. 1957. Check-list of North American Birds, 5th ed. Am. Ornithol. Union, Baltimore.

Binford, L. C. 1983. The 6th report of the California Bird Records Committee. W. Birds 14:127–146

Drost, C. A., and Fellers, G. M. 1991. Density cycles in an island population of deer mice, *Peromyscus maniculatus*. Oikos 60:351–364.

Drost, C. A., and McCluskey, R. C. 1992. Extirpation of alternative prey during a small rodent crash. Oecologia 92:301–304.

Garrett, K. L. and Dunn, J. L. 1981. Birds of Southern California: Status and Distribution. Los Angeles Audubon Soc., Los Angeles.

Hamilton, R. A., and Willick, D. R. 1996. The Birds of Orange County, California. Sea and Sage Press, Irvine, CA.

Hamilton, R. A., and Gaede, P. A. 2005. Pink-sided × Gray-headed Juncos. W. Birds 36:150–152,

Hamilton, R. A., Patten, M. A., and Erickson, R. A. 2008. The Rare Birds of California. W. Field Ornithol., Camarillo, CA.

Hunt, G. L., Jr., and Hunt, M. W. 1974. Trophic levels and turnover rates: The avifauna of Santa Barbara Island, California. Condor 16:363–369.

Iliff, M. J., McCaskie, G., and Heindel, M. T. 2007. The 31st report of the California Bird Records Committee: 2005 Records. W. Birds 38:161–205.

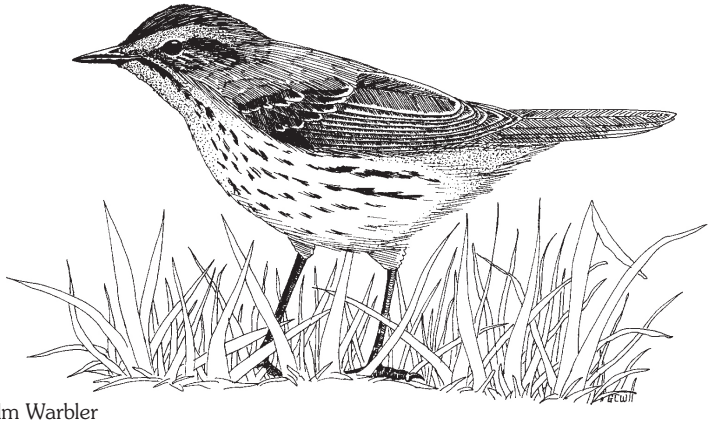
Jones, L., Collins, P. W., and Stefani, R. 1989. A checklist of the birds of Channel Islands National Park. Southwest Parks and Monuments Assoc., Tucson, AZ.

Lehman, P. E. 1994. The Birds of Santa Barbara County, California. Vert. Mus., Univ. of Calif., Santa Barbara.

Patten, M. A., and Pruett, C. L. 2009. The Song Sparrow, *Melospiza melodia*, as a ring species: patterns of geographic variation, a revision of subspecies, and implications for speciation. Systematics and Biodiversity 7:33–62.

Pemberton, J. R. 1928. Additions to the known avifauna of the Santa Barbara Islands. Condor 30:144–148.
Pemberton, J. R. 1929. Some new records for Santa Barbara Island. Condor 31:37.
Philbrick, R. N. 1972. The plants of Santa Barbara Island, California. Madroño 21:329–393.
Pike, J. E., and Compton, D. M. 2010. The 34th report of the California Bird Records Committee: 2005 records. W. Birds 41:130–159.
Pyle, P., Nur, N., Henderson, R. P., and DeSante, D. F. 1993. Effects of weather and lunar cycle on nocturnal migration of landbirds at Southeast Farallon Island, California. Condor 95:343–361.
Pyle, P. 1997. Identification Guide to North American Birds. Slate Creek Press, Bolinas, CA.
Richardson, T. W., Pyle, P., Burnett, R., and Capitolo. P. 2003. The occurrence and seasonal distribution of migratory birds on Southeast Farallon Island, 1968–1999. W. Birds 34:58–96.
Sullivan, B. L., and Kershner, E. L. 2005. The birds of San Clemente Island. W. Birds 36:158–273.
Unitt, P. 1984. The birds of San Diego County. Mem. San Diego Soc. Nat. Hist. 13.
Unitt, P. 2004. San Diego County bird atlas. Proc. San Diego Soc. Nat. Hist. 39.
Wehtje, W. 2000. Final report on the status, distribution, and habitat associations of six breeding land bird species on San Nicolas Island, Ventura County, California. Report to Evironmental Project Office, Naval Air Station, China Lake, CA.

Accepted 14 May 2012



Palm Warbler

Sketch by George C. West