

## TRANS-GULF MIGRATION, SPRING 1952

BY HARVEY R. BULLIS, JR.

A HEAVY trans-Gulf bird migration during the spring of 1951 was described in a previous report (Bullis and Lincoln, 1952), which included a list of species observed and collected and weather tables. The observations were made from the M/V *Oregon*, an exploratory fishing vessel operated by the U. S. Fish and Wildlife Service, while the vessel was engaged in night trawling off the Louisiana coast. Further observations were recorded aboard the *Oregon* during the Spring of 1952. Observations made from March 31 to May 20, cover an east-west range of more than 600 miles on the open Gulf (from off Pensacola, Florida, to a position off Laguna Madre, Texas).

On the night of March 31, the *Oregon* was anchored at 29° 23.2' north latitude, 88° 03' west longitude, about 55 miles south of Mobile Point, Alabama. At 10:00 p.m. I was called on deck by a crew member who had spotted a few birds passing over. The afterdeck was lighted as previously described (Bullis and Lincoln, 1952: 35). A light, drizzling rain cut visibility down to a few hundred feet. The following notes were taken:

10:00 p.m. Several warblers flying under boom light; Mourning (?) Warbler, Redstart, duck (?). Southeasterly wind 18 to 24 m.ph. Low overcast, rain.

10:15 p.m. Ten to 25 warblers can be seen at one time. Rain lighter.

10:20 p.m. Rain heavy. Few more birds visible. Every minute or so a large bird flashed under boom light. Another duck. Purple Martin (?).

10:22 p.m. A large heron-like bird flew across stern. SE squall with driving rain. Least Bittern and Scarlet Tanager.

10:25 p.m. One swift. Least Bittern hovers under mast lights for 10 or 15 seconds. Lightning flashes reveal large groups of birds passing over the boat, heading north.

10:27 p.m. Eight to ten bitterns flew past.

10:30 p.m. Least Bittern hit the deck. At the same time two more hit the water off port side.

10:34 p.m. Swallows directly over head. Great Blue (?) Heron. Eight to ten species of warblers visible at one time. Rain lighter.

10:38 p.m. Two American Bitterns flew past. Another Least Bittern. Steady rain. Visibility about 200 feet.

10:42 p.m. Purple Martin landed on triple block lines. Flew off when I approached. Warbler landed on water next to the boat. Took off when I attempted to pick it up with a dip net. Was "sitting" on the water holding its wings high.

10:52 p.m. Searchlight on. More martins and smaller birds (larger than warblers) heading north. One Prothonotary Warbler. Another Least Bittern. Lightning shows 100 to 200 birds overhead beyond the lighting from the vessel. Rain picking up.

10:54 p.m. Sora Rail hit deck. Large grey bird landed on deck, took off immediately. Many Cliff Swallows, herons, bitterns. Warblers by the dozens. Rain very heavy from the southeast. Kingfisher overhead. Three Purple Martins

landed on the starboard boom stay. Another Kingfisher. Small, bright yellow bird flew by galley door.

11:00 p.m. More Kingfishers and herons.

11:02 p.m. Prothonotary Warbler landed on winch. Flew off after a few minutes. Kingfishers and herons directly overhead, heading north. Several large birds, appear to be Black-crowned Night Herons. Grey with black-topped heads. Calls sound like "caw-wock." Rain lighter, but driving. Southeasterly wind at

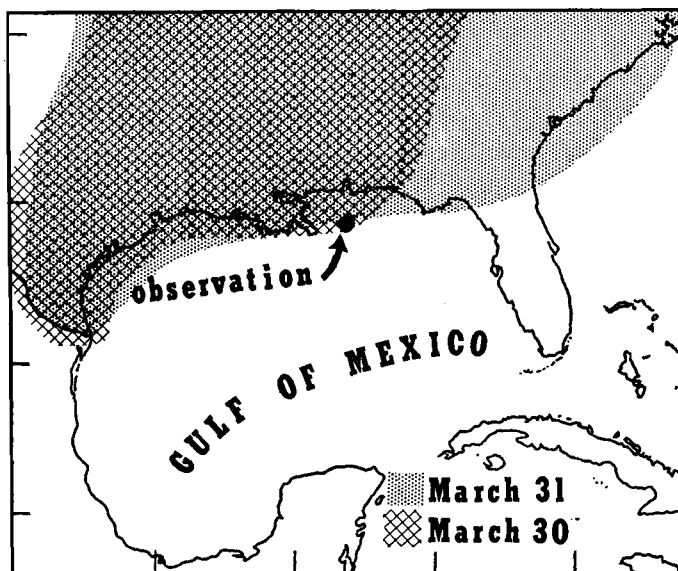


Figure 1. Areas of precipitation over southeastern United States during March 30 and 31, 1952. (From Daily Weather Maps for March 31 and April 1, 1952.)

20 to 25 m.p.h. A small, all red bird, under boom light for a second. Rain heavier. Still many warblers and larger birds. Martin almost flew into galley.

11:15 p.m. Rain coming down in driving sheets. No birds visible for a minute or two. Wind 30 to 35 m.p.h. Scattered birds hovering over stern.

11:18 p.m. Calls increase as rain becomes lighter. They entirely stop during heavy rain. Five to ten warblers visible at one time.

11:20 p.m. Rain lighter. A few larger birds. One reddish-brown bird the size of a martin. More Kingfishers.

11:30 p.m. Wind up to 40 m.p.h., southerly. Rain lighter but driving. Birds seen only occasionally. About 3 or 4 a minute.

11:33 p.m. Wind 50 to 60 m.p.h., gusts. Rain heavy. No birds.

11:37 p.m. Wind up to 85 m.p.h. No birds.

11:45 p.m. Wind started to shift around to west but came back to southeast. Gusts down to 50 to 60 m.p.h. Seas very rough. Florida Gallinule blown into galley.

11:46 p.m. Slight lull in wind, down to 30 to 40 m.p.h. Few gusts of 50 m.p.h. No birds.

11:59 p.m. Rain light to moderate. Wind 40 m.p.h. plus. No birds.

12:30 a.m. Lightning flashes reveal no birds. No calls heard. Rain moderate. Winds 20 to 30 m.p.h. Seas heavy. No birds seen or heard for the rest of the night.

TABLE 1

HOURLY PRECIPITATION (IN INCHES) AT VARIOUS U. S. WEATHER BUREAU STATIONS ALONG THE NORTHERN COAST OF THE GULF OF MEXICO FOR MARCH 31, 1952

	A. M. Hour ending at											
	1	2	3	4	5	6	7	8	9	10	11	12
Galveston												.12
Port Arthur		T	.01									
New Orleans	.30	.02	.45	.10	T				T		T	T
Mobile	.02	.02	.03	.02	T	.04	.02	.08	.05	.04	.05	.30
Pensacola			T	.01	.02	.01	T	T	.06	T	.09	.58
	P. M. Hour ending at											
	1	2	3	4	5	6	7	8	9	10		
Galveston	1.80	1.19	.22	.22	.20							
Port Arthur	.03	.17	.10	.10	.12	.08	T					
New Orleans	.05	.41	T	.01	.01	.19	.21	.50	.17	.18		
Mobile	.05	T	.39	.19					.01	.08		
Pensacola	1.01	.77	.28	.33	.28	.03	T	T	T	T		

For the two days preceding this observation the entire northern Gulf coast between Brownsville and Cedar Keys was blanketed in a heavy overcast and almost steady rain which extended inland for several hundreds of miles (see figure 1). The U. S. Weather Bureau records for March 31 show the following precipitation: Galveston, 3.77 inches; New Orleans, 2.60 inches; Mobile, 1.66 inches; and Pensacola, 3.76 inches. The hourly precipitation at several Gulf coast weather stations (table 1) further emphasize the exceedingly dismal conditions that prevailed. It does not seem likely that birds would be active in migration flight anywhere in this area. Williams (1950: 55) points out that rain has a very definite deterring effect on coastwise migrants and invariably brings about the precipitation of migrants which remain until the weather has bettered. Birds in the process of circum-Gulf flight would have stopped upon reaching the rain fronts in southern Texas and in northern Florida. On the other hand, birds leaving the Yucatan Peninsula would have no forewarning of weather conditions 500 miles to the north and, upon reaching the rain front along the northern coast, would have no alternative but to continue on to land.

During this period a cold front was in the process of moving down from the northwest, and it finally reached the northwestern part of the Gulf late in the afternoon of April 1. At the time of the observation this front was still more than 300 miles from any point on the Gulf coast and would seemingly have been too far inshore to have had any direct influence. Gentle to moderate southeasterly winds prevailed along the coast throughout March 31 and were accompanied by a slowly falling barometer.

By 1:30 p.m. a squall line had formed in central Mississippi, extending north to southern Michigan. During the afternoon this

line apparently "broke" in half and the northern line remained almost stationary (from Tennessee northward). The southern half moved southeasterly (preceding the cold front by 300 to 500 miles) and passed over Mississippi and Alabama and crossed the north Gulf Florida coast. At Mobile and Pensacola the fastest winds recorded were 20 m.p.h. (southeasterly) and 24 m.p.h. (easterly), respectively. Winds at New Orleans showed some shifting within the eastern quadrant with a fastest speed of 16 m.p.h. After the squall line had crossed the coastline and as it approached the *Oregon's* position, the prevailing southeasterly winds started to accelerate. The line crossed the *Oregon's* position at approximately 11:40 p.m. and at this point was accompanied by southeasterly winds of hurricane intensity and a driving, almost horizontal rain.

This squall line would probably have had little if any effect on birds that were in its path and already ashore. Along the coast, lowest temperatures following the line varied in the low 60's, and both the prevailing and fastest winds recorded along the northeast Gulf coast were neither from the proper direction to blow birds out off the coast (if any were in flight), nor of sufficient velocity to scare birds up off the ground. The atypical wind behavior of this particular line, which would usually be accompanied by a changing wind direction, was further substantiated by *Oregon* weather records which show the wind coming from the southeast preceding, during and following the passing of the squall.

Since the existing weather conditions strongly suggest the improbability of bird migratory movements either coastwise or overland at this time, it is assumed from the direction and behavior of the flight observed that this migration originated in the vicinity of the Yucatan Peninsula and had arrived at the point of observation by reasonably direct flight.

The following night (early morning of April 2) another short observation was made at the same position. The following notes were taken:

12:40 a.m. Birds coming over the boat. Wind NE  $\times$  E, 8 to 15 m.p.h. Heavy fog impairs visibility.

12:44 a.m. Searchlight on. Visibility about 100 feet. Two crew members reported 5 "teal" at 10:00 p.m. last evening (April 1).

12:45 a.m. Warblers seen about one per minute. Call heard every few seconds.

12:50 a.m. Calls increasing. Large bird flashed under boom light. Two or three warblers can be seen at one time. Calls almost continuous. Fog appears to be very low over water (up to 20 or 30 feet) with the birds flying right above it; none seen near the surface of the water. Birds flying directly into NE wind.

1:00 a.m. Wind about 20 m.p.h. from the north. Birds seem to be making very little headway now.

- 1:10 a.m. Fog lifting. Calls fewer, about 2 per minute.  
1:15 a.m. Warbler under boom light, flew off to NE. Larger bird crossed searchlight beam, heading NW.  
1:25 a.m. Fog gone, sky clear. Only two calls in last 5 minutes.  
1:45 a.m. Calls very scarce. One every few minutes. Sky clear but too dark to see anything.

On the afternoon of April 10, 1952, the *Oregon* was in the vicinity of 28° 25' north latitude, 92° 28' west longitude (100 miles south southeast of Cameron, Louisiana). During the morning there was some light rain with light southeasterly winds. Shortly before noon the wind changed to west-northwest and by early afternoon had steadied, coming from the northeast with speeds of 8 to 15 miles per hour. There was a slight lowering of the temperature (3 to 5 degrees), but the barometer held steady until that evening. The following notes were taken:

- 3:30 p.m. Three Pomarine Jaegers follow the wake of the vessel.  
4:45 p.m. About 15 Gannets flying north—3 immatures and approximately 12 adults.  
5:00 p.m. Twenty to 25 ducks several hundred yards ahead at approximately 1,000 feet elevation, heading northwest into the wind.  
5:02 p.m. Three swifts flew past heading northwest. Flying very low over the water, almost skimming the waves.  
5:15 p.m. About 15 small, dark birds flying a few feet above the water, heading northwest.

During the next hour several groups of birds (3 to 25 in each group) were seen heading northward.

The light northeasterly winds held until mid-morning, April 11, and then switched back to the southeast. The barometer dropped about 10 points at this time (to 30.18). It reached a low of 29.82 at 2:00 a.m., April 12, with winds increasing to 35 m.p.h. No birds were seen at night during this period, but occasional small groups of small birds were seen heading northwestward during daylight hours. The only specific record on this date was a Cliff Swallow that landed on the forestay for a few seconds. The other birds showed no interest in the vessel.

At 2:30 p.m., April 18, a Barn Swallow landed on the boat, position 26° 56' north latitude, 96° 20' west longitude (about 70 miles southeast of Aransas Pass and 55 miles off Padre Island). It appeared exhausted and was easily captured by hand. It was set free a few minutes later, but after circling the vessel a few times it returned and landed. A short time later it was killed flying against a cabin wall.

At 8:00 p.m. that evening, several small birds, for the most part warblers, were seen passing under the boom light. The *Oregon* was

on station number 552 for the following hour (25 to 30 miles east of the center of Padre Island). During this time the number of passing birds that could be seen at one time rapidly increased until *hundreds were continuously visible*. A Summer Tanager, two Orchard Orioles, and 10 to 15 warblers were retrieved after they had struck the rigging and fallen to the deck or into the water. Perhaps over a hundred fell beyond reach. A much more spectacular view of the flight could be seen from the crow's nest. The aureole of light caused by the reflection of the vessel's brilliant lighting gave me a clear view for several hundred feet. Thousands of passerine birds, none larger than orioles, could be seen. The entire flight was approaching the vessel from a southeasterly direction, that is, *from the direction of the open Gulf*. Apparently the light altered the horizontal flight path slightly, if at all, at least in the vicinity of the boat, for the birds continued in a northwesterly direction.

In the next thirty-five minutes the *Oregon* moved to station number 553, position 26° 54.6' north latitude, 97° 03.4' west longitude (17 miles east of Padre Island). While in transit, birds were visible continuously. At this last position one Baltimore Oriole, two Indigo Buntings, and several more warblers were collected. Hundreds of birds were again seen flying overhead and on both sides of the vessel in a northwesterly direction. There did not appear to be any specific altitude to this flight. There was an even distribution of birds from a few inches above the water to as high as visibility permitted me to see them. Thirteen species were collected at these two points as follows: Barn Swallow (*Hirundo rustica*), 1; Yellow-throat (*Geothlypis trichas*), 43; Kentucky Warbler (*Oporornis formosus*), 3; Redstart (*Setophaga ruticilla*), 2; Worm-eating Warbler (*Helmitheros vermivorus*), 1; Black and White Warbler (*Mniotilta varia*), 2; Tennessee Warbler (*Vermivora peregrina*), 1; Golden-winged Warbler (*Vermivora chrysoptera*), 1; Cerulean Warbler (*Dendroica cerulea*), 1; Summer Tanager (*Piranga rubra*), 1; Orchard Oriole (*Icterus spurius*), 2; Baltimore Oriole (*Icterus galbula*), 1; and Indigo Bunting (*Passerina cyanea*), 2.

At 10:30 p.m. the *Oregon* moved to station number 554, position 27° 03.5' north latitude, 96° 56.2' west longitude (25 miles off Padre Island), arriving there at 11:30 p.m.; at 12:30 a.m., April 19, proceeded to station number 555, position 27° 12.2' north latitude, 96° 52' west longitude; and at 3:50 a.m. anchored and spent the following twelve hours on station number 556, position 27° 20.4' north latitude, 96° 40.2' west longitude (35 to 40 miles southeast of Aransas Pass). The same general flight conditions as previously described with birds visible in great numbers until shortly before dawn. By 6:00 a.m.

no birds were to be seen. From mid-morning until late afternoon a light drizzling rain kept visibility down, and the only birds seen were Laughing Gulls.

This flight undoubtedly had the most advantageous weather conditions of all flights observed from the *Oregon* during the spring of 1952. Gentle to moderate winds had prevailed for several days. Temperatures ranged from the high 60's to the low 70's. Sky coverage

TABLE 2

WEATHER CONDITIONS, FOR THE AREAS UNDER OBSERVATION, FOR APRIL 18-19, 1952.  
(TAKEN FROM THE BRIDGE LOG OF THE M/V *Oregon*).

Date	Hour	Wind (in miles per hr.)	Barom- eter	Temper- ature	Sky condition
April 18	2:00 a.m.	SE 6-12	30.28	67	Partly cloudy
April 18	4:00 a.m.	SE 6-12	30.28	67	No data in log
April 18	6:00 a.m.	SE 5-12	30.26	68	Cloudy
April 18	8:00 a.m.	SE 6-10	30.29	68	Cloudy
April 18	9:00 a.m.	SE 12	30.34	70	No data in log
April 18	10:00 a.m.	SE 12-18	30.31	70	Partly cloudy
April 18	noon	SE 5	30.31	72	Cloudy
April 18	1:00 p.m.	SE 5-10	30.28	73	Cloudy
April 18	2:00 p.m.	SE 6-8	30.26	72	No data in log
April 18	4:00 p.m.	SE 6-8	30.22	72	No data in log
April 18	6:00 p.m.	SE 5-10	30.21	71	Cloudy
April 18	7:00 p.m.	SE 12	30.21		Cloudy
April 18	8:00 p.m.	SE 12-18	30.22	70	Cloudy
April 18	9:00 p.m.	SE 12		70	Cloudy
April 18	10:00 p.m.	SE 12-18	30.23	68	Cloudy
April 18	midnight	SE 12-18	30.23	68	Cloudy
April 19	2:00 a.m.	SE 8-10	30.19	66	Cloudy
April 19	4:00 a.m.	SE 6-12	30.16	68	Cloudy
April 19	3:00 p.m.	SE 12-18	30.09	64	Rain
April 19	4:00 p.m.	SE 6-10	30.07	65	Rain

varied from partly cloudy to overcast with openings. There was no rain or fog within 100 miles of the coast at any time on April 18. Rain started at the *Oregon's* position and over southern Texas in mid-morning on April 19, after the migration flight was presumably well inland from the Texas coast. Table 2 presents the weather data collected on the *Oregon* for this period.

At 5:30 p.m., May 19, the *Oregon* left the Pascagoula ship channel and pursued a southeasterly course in a line between Pascagoula and a point 100 miles west of Tampa Bay. For the following 24 hours the vessel traveled under a high, occasionally broken overcast and through intermittent rain. Southeasterly winds of 20 to 25 m.p.h. prevailed throughout the day. Shortly before midnight the wind swung around to the east and the velocity dropped to 12 to 18 m.p.h.

A cold front, moving from the northwest, had reached the northwest Gulf in the early afternoon of May 18. By 1:30 a.m., May 20, it was still west of the Mississippi Delta. At 2:00 a.m. (approximately 80 miles south of Mobile Bay) a large flight of warblers started passing over the boat *heading north* despite the easterly winds. No positive identifications were made, but 10 to 25 birds could be seen continually until 4:30 a.m., and I would estimate that thousands passed in view. After that time the numbers decreased steadily until daylight when only scattered individuals could be spotted. At 11:00, 11:20, and 12:00 a.m. small flocks of swallows (some were Barn Swallows) were seen heading northeast, some distance from the boat. Warblers were seen singly and in small groups for the rest of the afternoon and during the following morning. At 6:00 a.m. on May 21 (approximately 100 miles off Tampa Bay) a Louisiana Water Thrush and a Palm Warbler landed on the vessel and were collected.

In summary, from March 31 through May, 1952, migrating birds were seen out over the open Gulf between southern Texas and the west coast of Florida. Over this wide range (actually spanning the entire northern Gulf) birds were observed in northward flight, singly, in small groups, and in mass congregations, under many different weather conditions. All of the major flights observed took advantage of favorable southeasterly winds. When migrating birds encountered head-winds associated with cold fronts that had moved from the land out over the Gulf, they proceeded to fly into the adverse winds, hence, in the direction of the northern Gulf coast. No birds were seen fleeing before a cold front. Some of the birds seen in the course of these observations could naturally have been displaced strays. Judging, however, from the directional trends and other characteristics of the flights and the observed circumstances surrounding them, there can be little doubt that they represent a great volume of birds in the process of making an intentional trans-Gulf migration.

#### LITERATURE CITED

- BULLIS, HARVEY R., JR., and FREDERICK C. LINCOLN. 1952. A trans-Gulf migration. *Auk*, 69 (1): 34-39.
- WILLIAMS, GEORGE G. 1950. Weather and spring migration. *Auk*, 67 (3): 52-65.
- UNITED STATES WEATHER BUREAU. 1952. Station meteorological summary, March, April, May (Stations of Pensacola, Fla., Mobile, Ala., New Orleans, La., Port Arthur, Tex., and Galveston, Tex.).
- UNITED STATES WEATHER BUREAU. 1952. Daily weather maps (March, April, May).

*Fish and Wildlife Service, United States Department of the Interior, Washington 25, D. C., May 22, 1953.*