

Tomich, and Treichel (Ecol. Monogr., 25, 1955:107) for the Snowy Owl (*Nyctea scandiaca*) and by Cade (*op. cit.*) for the Gyrfalcon (*Falco rusticolus*), successful reproduction by raptors nesting at high latitudes is promoted by an early start, which increases the likelihood that the young will be able to care for themselves before the advent of the fall and winter period of food scarcity. To gain such an advantage, however, raptors with long reproductive periods must begin nesting quite early in the Arctic—long before most other birds start nesting and at a time of the year when conditions may be quite harsh. In the case of the Golden Eagle, incubation lasts about 45 days, the young start flying at an age of about 75 days but remain dependent upon their parents for food until they are at least 90 to 100 days old (see Bent, U. S. Nat. Mus. Bull. No. 167, 1937; Dementiev, *op. cit.*; Brown, Eagles, 1955), so that the total period of development after laying is approximately 135 to 145 days.

In the Alaska Range, Murie (*op. cit.*) found that arctic ground squirrels (*Spermophilus undulatus*) made up over 80 per cent of the prey eaten by eagles during the breeding season, and it seems likely that this same dependence also holds in the Brooks Range because ground squirrels are the only suitable prey that is widespread and common there. If their reproductive effort is contingent upon a supply of ground squirrels as the basic food, then the eagles must arrange their timing of reproduction to correspond with the rather precise timing of the spring emergence from hibernation and the fall disappearance of the ground squirrels (Hock, Bull. Mus. Comp. Zool., 124, 1960:156). Particularly in the Brooks Range, with the disappearance of the ground squirrels in the last part of September virtually all readily available food for the eagles is gone. Rock Ptarmigan (*Lagopus mutus*) are sporadically available, but by then the young ptarmigan are strong on the wing, and a juvenal eagle would probably find it difficult to catch them. Five species of microtine rodents are available, but even though eagles do catch these mice in northern Alaska, their small size probably renders the effort involved in their capture uneconomical for a bird as large as an eagle.

In other words, the young eagle must be independent and ready to leave the north side of the Brooks Range by the middle of September. Hence, the adult eagles must lay their eggs not later than the first week of May, with hatching taking place no later than mid-June. As pointed out by Campbell (*op. cit.*), this estimate is consistent with the date of the eggs reported by Bailey and with the age of the young found by him in August.

It is difficult to say what proximate factors set the precise time of reproductive onset in eagles attempting to nest in the Brooks Range, but weather and feeding conditions are plausible modifiers. Our earliest dates for the appearance of eagles at Lake Peters are April 24, 1960 (Carroll Rock) and April 28, 1961. Irving (*op. cit.*) gives a number of early dates for Anaktuvuk Pass ranging from March 23 to April 10. At this season winter conditions still prevail with subfreezing temperatures and a snow cover that has not yet begun to thaw. Food is scarce and must consist mainly of ptarmigan, because the ground squirrels and marmots do not appear until the latter part of April and do not reach maximum spring numbers above ground until the first part of May. Unusually harsh weather in April, poor stocks of ptarmigan, or lower than average spring populations of ground squirrels appearing at the end of April may make the difference between success and failure in the initial reproductive effort.

As far as weather is concerned, winter conditions are just as harsh in the Alaska Range when the eagles arrive, but the variety of prey available there is much greater. In addition to three species of ptarmigan, there are also present at the edge of the forest three species of grouse, the snowshoe hare (*Lepus americanus*), the red squirrel (*Tamiasciurus hudsonicus*), and a number of other less probable species of prey; but it is not known to what extent any of these species are actually utilized by eagles during the first part of the breeding season.

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Further Information on the Caribbean Martin in México.—On April 17, 1961, Davis noted approximately 30 Caribbean Martins (*Progne dominicensis*) flying over a steep, pine-covered ridge 3 miles north of Tzitzio, Michoacán, México. The birds were in small groups but within these groups pairs were evident. A male with the left testis 5 mm. long and a female with the largest follicle 1 mm. in diameter, were collected. Both birds were noted as having "much fat," suggesting recent arrival.

On May 9, the martins were distributed in singles, pairs, and trios. A male with the left testis measuring 18×12 mm. and a laying female with a brood patch were collected. On May 20, the martins were distributed in the same fashion noted on May 9. A male with the left testis 12 mm. long and a laying female with a brood patch were collected. The presence of a breeding colony at this locality was thus established.

In 1951, Davis (Condor, 55, 1953:90-98) did not record this species in repeated visits to this identical ridge between July 13 and 30. It is possible that in 1951 the birds had nested early and had disappeared prior to July 13. However, if the nesting schedules in 1951 and 1961 were comparable, with at least some females still laying as late as May 20, it seems likely that some birds would have been present as late as mid-July. It seems more likely, then, that this nesting colony was established in the course of the past ten years.

The white-bellied martins of México, originally described as *Progne sinaloae* by Nelson (Proc. Biol. Soc. Wash., 12, 1898:59), have been treated by some taxonomists as a subspecies of the Purple Martin, *Progne subis* (Hellmayr, Field Mus. Nat. Hist., Zool. Ser., vol. 13, pt. 8, 1935:16; Moore, Condor, 40, 1938:25; Blake, Birds of Mexico, 1953:368; Eisenmann, Trans. Linn. Soc. N.Y., 7, 1955:73, footnote 5; and Miller, Pac. Coast Avif. No. 33, 1957:107), and by others as a subspecies of *P. dominicensis* (Zimmer, Am. Mus. Novit., No. 1723, 1955:2-4; Phillips, An. Inst. Biol., 30, 1959:351-352; and Peters, Check-list of Birds of the World, 9, 1960:87).

Caribbean Martins have been found probably breeding in the Sierra de Nacori Chico, Sonora, where Allan R. Phillips collected a male and female in early June, the former with greatly enlarged gonads (Zimmer, *op. cit.*:4; these specimens have not been examined by us). Phillips (*op. cit.*:351) noted Purple Martins in these same mountains but was unable to collect them. It seems likely that the two forms breed there sympatrically. In southwestern Chihuahua, *dominicensis* has been found in August at San Feliz, on the Chihuahua-Sinaloa boundary due east of Tepetuco, Sinaloa (specimens in Robert T. Moore Collection). In Nayarit, specimens in the Moore Collection were collected from a breeding colony 10 miles north of Santa Teresa. Purple Martins have been recorded as breeding at Tepic. In Jalisco, specimens in the American Museum of Natural History from La Laja were reported on by Zimmer (*op. cit.*). This locality is not possible to locate exactly, but the field notes of the collector, J. H. Batty, as published by Allen (Bull. Am. Mus. Nat. Hist., 22, 1906:237-238), suggest that it lies in northwestern Jalisco several days by pack train south of Amatlán de Cañas, Nayarit. One of the males from La Laja is labeled "common, pairing" and another is labeled "probably breeding." With the exception of the Sonoran record, there is no evidence of sympatric breeding of the two species at any of these localities.

The presence of a breeding colony 3 miles north of Tzitzio extends the breeding range of *dominicensis* approximately 235 miles east-southeast of La Laja and provides the southeasternmost record of the species in México. Lea and Edwards (Condor, 52, 1950:264) recorded a colony of *Progne subis* from Cerro Moluca, approximately 15 miles southeast of Pátzcuaro, Michoacán, and they collected a female with "oviduct large" on May 2, 1947. Presumably, then, this was a breeding colony. Cerro Moluca is 40 miles southwest of the locality 3 miles north of Tzitzio. Thus, the breeding range of *dominicensis* cuts across the breeding range of *subis* in Michoacán. Considering as well the occurrence of both species in the Sierra de Nacori Chico, Sonora, in early June, the distributional evidence at hand, scanty though it may be, argues for considering the two forms as specifically distinct.

At this point, we must consider the morphological evidence for possible interbreeding between these two forms. Van Rossem (Birds of Sonora, 1945:165, footnote 40) reported a male *P. subis*, in breeding condition, collected at Agiabampo, Sonora, on May 18, 1937 (Dickey Collection 32053). As noted by van Rossem, this specimen, which we have seen, is small for *subis*, has conspicuously white-margined under tail coverts, and a few concealed white feathers on its sides. This is the only specimen which we have seen that shows any combination of the color characters of the two species, and "*dominicensis*" characters are very weakly expressed. Small size is perhaps the most pronounced approach of this individual toward *dominicensis*. Specimens of *dominicensis* from Chihuahua, Nayarit, Jalisco, and Michoacán show no approach toward *subis* in color. We have seen five males and three females of the series of 13 specimens collected by Batty at La Laja, and in color these are pure *dominicensis* and show no signs of intermediacy between *subis* and *sinaloae* as inferred by Miller (*loc. cit.*). Although we have not seen the two Sonoran specimens of *dominicensis* collected by Phillips, Zimmer

(*op. cit.*:4) stated that they "agree well with the series from Jalisco both in coloration and size." As regards color, then, the only specimen that shows any approach of one species toward the other is the specimen of *subis* from Agiabampo.

As regards size, the specimen from Agiabampo is within the size range of *dominicensis*. Van Rossem (*loc. cit.*) gave measurements for this specimen as follows: wing, 137 mm.; tail, 71. Our measurements of this specimen are: wing, 140.6; tail, 69.6. Series of *dominicensis* show considerable variation in wing and tail length (table 1). The series from La Laja is noticeably longer-winged than the series

TABLE 1
MEASUREMENTS IN MILLIMETERS OF CARIBBEAN MARTINS FROM MEXICO

	Number	Mean	Range
Chihuahua-Nayarit			
Wing ♂	13	136.3	131.6-141.3
♀	7	135.4	130.3-141.5
Tail ♂	12	69.8	66.7-73.0
♀	6	69.5	66.8-74.5
Jalisco			
Wing ♂	5	142.4	139.5-145.7
♀	3	139.6	135.0-147.8
Tail ♂	5	70.7	67.6-72.9
♀	3	70.6	68.0-75.6
Michoacán			
Wing ♂	2	135.8	135.1-136.4
♀	3	132.9	132.3-133.9
Tail ♂	3	72.2	71.1-73.1
♀	3	69.3	68.0-71.8

from Nayarit-Chihuahua and Michoacán. Even within this series, however, there is only one specimen that falls well within the ranges of wing and tail lengths for *subis*, a female with a wing length of 147.8 mm. and a tail length of 75.6 mm. (AMNH 105073). In size, then, the only specimens showing any pronounced approach of one species toward the other are the small male *subis* from Agiabampo and the large female *dominicensis* from La Laja. It seems best to consider these specimens as individual variants.

Unless further material should be forthcoming providing strong evidence of interbreeding between *P. subis* and *P. dominicensis sinaloae*, we feel that the two forms should be considered distinct species and we agree with those authors who have previously considered them such.

Specimens from the American Museum of Natural History were made available through the courtesy of Dean Amadon and Charles E. O'Brien. O. M. Buchanan, Jr., kindly forwarded the specimen of *Progne subis* from the Dickey Collection. Specimens in the Robert T. Moore Collection were examined through the courtesy of John William Hardy. Seth B. Benson provided information on the Jalisco locality of La Laja.—JOHN DAVIS, *University of California, Hastings Reservation, Carmel Valley, California*, and ALDEN H. MILLER, *Museum of Vertebrate Zoology, Berkeley, California*, November 15, 1961.

A Chestnut-collared Longspur at Lake Tahoe, California.—While I was watching a small flock of Water Pipits (*Anthus spinoletta*) feeding along the shore of Lake Tahoe, near Tahoe City, Placer County, California, on October 15, 1961, I found a bird that I took to be a Chestnut-collared Longspur (*Calcarius ornatus*). The bird was collected and proved to be a male in winter plumage; it was deposited as a specimen (no. 142782) in the Museum of Vertebrate Zoology. The species is considered a rare vagrant from the northeastward, and this appears to be the first record from the Sierra Nevada.—R. G. McCASKEE, *Tahoe City, California, December 7, 1961*.