

First verifiable records of the



Figure 1. Typical Thick-billed Vireo from northern Bahamas, Abaco. Note yellow lores contrasting with whiter broken eye-ring, prominent white wingbars offsetting blackish greater coverts, fairly uniform upperparts, and dirty white, slightly yellowish underparts with some olive tones on the breast. This individual's bill is darker than some but still doesn't appear black. Photograph/Duncan S. Evered and Lyla R. Messick.



Figure 2. Thick-billed Vireo, Hypoluxo I., Florida. Note that the face, wing and bill are much like the typical individual pictured in Figure 1, and that the underparts could hardly be termed "uniform" or "yellow." The grayer-looking eye of this individual is not unusual. Photograph/Duncan S. Evered and Lyla R. Messick.



Figure 3. The same individual as in Figure 2. Note the prominent white edges to the tertials and fairly uniform olive upperparts (cf. Figure 1). Hypoluxo I., Florida. Photograph/Duncan S. Evered and Lyla R. Messick.



Figure 4. Molting Thick-billed Vireo, Cape Florida, Florida. This individual has a similar face and wing pattern to the bird in Figure 1 but has somewhat yellower underparts. Note the non-black bill. Photograph/George F. Wagner.



Figure 5. Another view of the Thick-billed Vireo at Cape Florida, Florida, showing the incomplete tail and very fine feathering below. At this angle, the throat appears more olive and the underparts more buffy. Again, note the non-black bill. Photograph/George F. Wagner

Thick-billed Vireo from the United States

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ON SEPTEMBER 9, 1989, WHEELER discovered the first of apparently three Thick-billed Vireos (*Vireo crassirostris*), that eventually were closely observed, photographed, and tape-recorded over a period of several weeks at Bill Baggs Cape Florida State Recreation Area, Key Biscayne, Dade County, Florida (25°40'N, 80° 09'W). On March 10, 1990, a singing Thick-billed Vireo was found by Howard P. Langridge on Hypoluxo Island, Lantana, Palm Beach County, Florida (26°35'N, 80°03'W). Captured that day, measured, and photographed in the hand by Evered and Messick, it was subsequently seen by numerous observers through April 1, 1990 (H.P. Langridge pers. comm.). We believe that the level of documentation now available for these records, coupled with more information about the species' appearance, resolves the long-standing uncertainty surrounding the Thick-billed Vireo's status in the United States. Previously, it was known from five published sight records.

Wheeler first observed what she believed was a Thick-billed Vireo at Cape Florida on September 9, 1989, in dense shrubs about 100 meters from the ocean. It responded very quickly to a "pish" and approached to less than two meters at heights under three meters. It moved methodically, seemed quite curious, and remained in close viewing distance for about ten minutes. On September 13, Wheeler and Virginia Edens studied the same or another Thick-billed Vireo in this vicinity for nearly an hour. As before, it responded quickly to a pish, was extremely tame, and foraged in dense shrubs and nearby fig trees (*Ficus* sp.) at heights from 0.5 to 6 meters, eating fruit and insects, including at least one large woolly caterpillar. The bird appeared somewhat similar in size and appearance to an immature White-eyed Vireo (*Vireo griseus*), but it appeared more robust and bull-headed; its bill, brownish in color, seemed

longer and thicker. The bird was in active molt. The brownish-olive tail was about half grown, with a marked graduation in feather length from the shorter outer rectrices to the longer central ones. The upperparts seemed fresh and were basically olive, blending almost imperceptibly from a more grayish-olive shade on the head to a more greenish-olive tone on the back. The tertials were edged in white and seemed to form stripes on the upperparts, parallel to the longitudinal axis of the body. The greater and median wing coverts had broad white tips, forming two conspicuous wingbars. The irises were brown. Distinct, bright yellow lores extended from the base of the bill to the area above the eyes. Directly above each eye was a small, dark gap in an otherwise off-white eye-ring extending behind and below each eye; the portion of the eye-ring behind the dark gap was slightly flared. A dusky line stretched from the bill to the eye immediately beneath the yellow lores. The underparts appeared to be in heavy molt and varied in shading depending upon factors such as the angle of observation or the amount of direct sunlight. The basic color was a dingy pale yellow from the bill to the vent. However, it varied in intensity and appearance from whitish to buffy, with areas of dusky olive, particularly on the throat and breast. The vireo did not sing, but did scold vigorously. The scold was distinctively harsh and resembled a series of low, protracted pishes. On September 14, Smith and Walter George, both familiar with the Thick-billed Vireo in the northern Bahamas, confirmed the identification.

On September 16, in the same general area, Smith and numerous other observers saw *three* Thick-billed Vireos together. The second individual, also in obvious molt, possessed a longer but still incompletely grown tail and appeared less olive on the throat and breast compared to the first, while the third individual was similar in

overall appearance, but had a complete tail. Each individual seemed to keep mainly to its own area about 100-200 meters from the next, but occasionally two or all three interacted. Both adult and immature White-eyed Vireos were also present in the same vicinity but were not observed interacting with the Thick-billed Vireos. To Smith or Wheeler's knowledge, no one saw more than one individual at the same time after September 17. On September 19, George F. Wagner took a long series of flash photographs of one individual. By September 30, no short-tailed individuals were being seen, and it was impossible to distinguish any individual with certainty. One studied by Smith on that date seemed to have completed its body molt; it seemed more uniformly colored below than any individual seen two weeks earlier. The color shade of the underparts then was mainly very pale dingy yellow, almost white, with some areas of olive, mainly on the breast. Although neither Smith nor Wheeler definitely observed a Thick-billed Vireo at Cape Florida after the end of September, reports continued occasionally through the autumn, until at least October 26 (H.P. Langridge *in litt.*). On October 18, at the same site, Robert Odear (pers. comm.) watched as a vireo, which he had identified as a Thick-billed, was captured by a passing raptor.

Figure 1 shows a bird photographed by Evered and Messick on Abaco, Bahamas, about 300 kilometers east of Florida. This is a typical Thick-billed Vireo of the northern Bahamas, big-billed and bulky-looking, with a mainly grayish to horn-colored (not truly black) bill, a prominent broken whitish eye-ring contrasting with yellow lores, prominent white wingbars contrasting with blackish wing coverts, mostly olive upperparts and yellowish-white underparts, with some buffy-olive tones on the sides of the breast. Some northern individuals appear dull yellow or even buffy below, but the

Table 1 MEASUREMENTS (mm) OF THICK-BILLED AND WHITE-EYED VIREOS

	N	Mean	Min.	Max.	S.D.
Thick-billed Vireo, Hypoluxo I., FL 3/10/90					
Wing length (natural chord)		59			
Tail length (to longest feather)		48			
Bill length (from anterior point of nostril)		8.5			
Bill depth (at anterior point of nostril)		4.6			
Bill width (at anterior point of nostril)		4.2			
Bill size index (bill length x depth x width)		164.2			
Weight (g, light fat evident)		14.4			
Live Thick-billed Vireos, Abaco, Bahamas					
Wing length	63	60.5	54	65	2.26
Tail length	63	51.2	47	54	1.89
Bill length	7	8.49	8.1	8.8	0.29
Bill depth	7	4.51	4.3	4.7	0.14
Bill width	7	4.39	4.0	4.6	0.21
Bill size index	7	167.76	158.4	180.1	6.74
Weight (g, light fat or less)	61	13.24	11.9	15.6	0.73
White-eyed Vireos from south Florida, UMRC					
Wing length	20	59.2	55	63	1.73
Tail length	20	48.2	45	53	1.85
Bill length	20	7.29	6.7	8.2	0.37
Bill depth	20	4.06	3.8	4.4	0.17
Bill width	20	3.76	3.2	4.2	0.21
Bill size index	20	111.27	93.1	133.6	10.18
Weight (g, from tag)	13	11.24	8.3	13.0	1.34

All measurements by D. S. Evered

the distinctive plumage features of adults and might appear more like Thick-billed Vireos in the field. However, T. Lloyd-Evans, who has handled many molting young White-eyed Vireos at the Manomet Bird Observatory, Massachusetts, indicates (pers. comm.) that the only reliable means of distinguishing juveniles from adults by late summer is by their brownish eye color and incomplete skull ossification. Indeed, Smith was unable to find a White-eyed Vireo specimen of any age, either at the USNM or in the University of Miami Research Collection (UMRC), that closely resembled the vireos at Cape Florida.

The Thick-billed Vireo on Hypoluxo Island (Figs. 2, 3) had measurements consistent with data collected by Evered and Messick on Abaco, Bahamas, for that species (Table 1). On the other hand, its bill size was inconsistent with bills of White-eyed Vireos from southern Florida in the UMRC. Because there was overlap between the species in most individual measurements (Table 1), we computed an index to represent the overall bill size(s) of each fully measured bird by multiplying its bill length by width by depth. This statistic easily discriminated all fully measured White-eyed Vireos ($S < 134$), including those collected in southern Florida and the Keys in summer, from all fully measured Thick-billed Vireos ($S > 158$), including the individual at Hypoluxo Island ($S = 164$) (Table 1, Fig. 6). Despite similar wing and tail measurements, a Thick-billed Vireo's weight also averaged more than a White-eyed Vireo's weight when little or no subcutaneous fat was evident (Table 1, Fig. 6). This suggests why the Thick-billed Vireo appears bulkier in the field.

deeper yellow individuals (which also have yellower eye-rings and greener upperparts) depicted in popular field guides (National Geographic Society 1983, Bond 1985) are found largely in the southern Bahamas (Buden 1985).

The birds at Cape Florida (Figs. 4,5) were consistent with Thick-billed Vireos, based upon Smith's examination of specimens at the United States National Museum of Natural History (USNM). Specimens secured in the Bahamas during July and August, some labeled immatures, are quite variable below, showing various shadings of dingy white, buff, yellow, and olive. A review of one or more of Wagner's photographs at the Museum of Comparative Zoology by Donald Buden (*in litt.*), at the USNM by Ralph Browning and Richard Banks (pers. comm.), and at the Royal Ontario Museum by Jon Barlow (pers. comm.), further confirmed the identification. Expert consensus is that the photographs most likely show an individual that has nearly completed its postjuvinal molt, although the possibility of its being an adult cannot definitely be ruled out (J. Barlow, R. Laybourne *et al.* pers. comm.).

In addition to having white eyes, adult White-eyed Vireos differ from

these birds in having lemon-yellow flanks, a grayish white throat and breast, a white belly, and suffused yellow spectacles. They also typically have rather green backs and contrasting gray necks, but this character varies considerably, perhaps due to wear. The bill (particularly the upper mandible) of White-eyed Vireos generally appears jet black. Thus, coupled with its typically smaller size and shorter, less deep bill, adult White-eyed Vireos ordinarily look quite different in the field from Thick-billed Vireos. Some literature (*e.g.*, Dwight 1900, Pyle *et al.* 1987) suggests that juvenile White-eyed Vireos lack some of

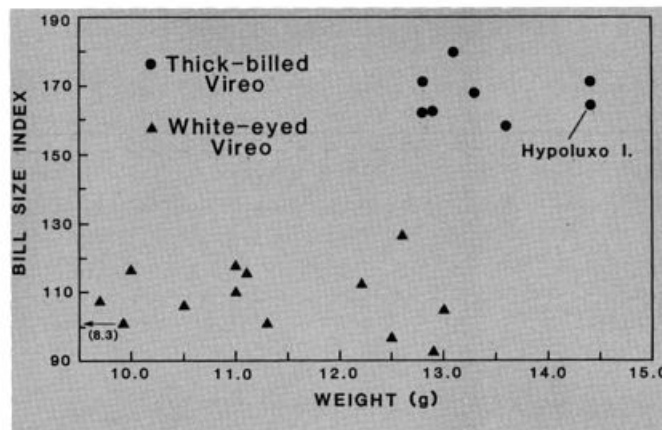
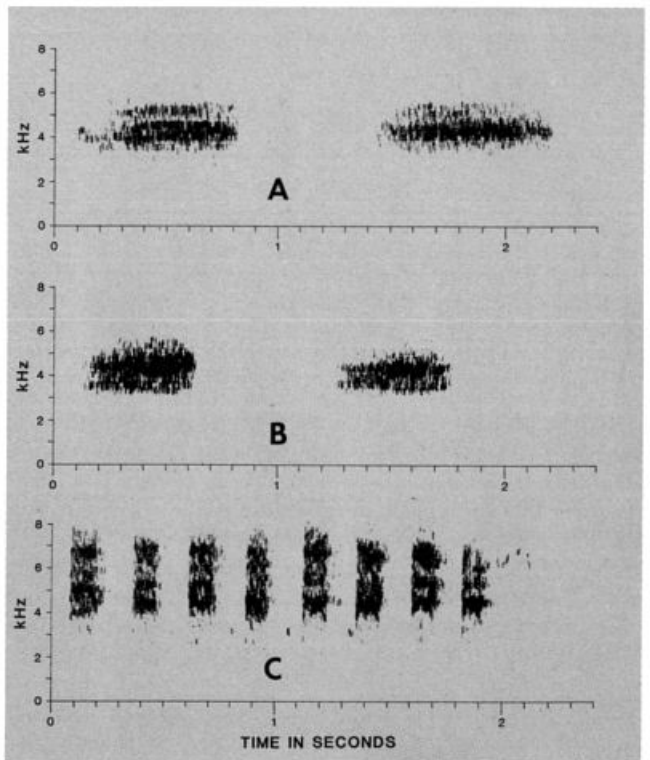


Figure 6. All Thick-billed Vireos have larger bills than White-eyed Vireos, and most are greater in overall body size as measured by weight. By these criteria, the Hypoluxo I. bird agrees only with Thick-billed Vireo.

The slow, long, harsh scolding notes given by one Thick-billed Vireo at Cape Florida, taped by Smith on September 14, (Fig. 7A), sounded quite different from a White-eyed Vireo's typical rapid chattering scolds of much wider frequency range taken from the Florida Museum of Natural History Bioacoustics Archives (Fig. 7C). Playback of the September 14 recording often would evoke an active response and draw one of the Thick-billed Vireos into close view. White-eyed Vireos at Cape Florida, on the other hand, exhibited no interest in playback of this recording; when they did scold, the sound was much like the rapid chattering depicted by Fig. 7C. Prompted by the distinctiveness of the sound recorded on September 14, Smith went to Nassau, New Providence, Bahamas, on December 12, and taped the call notes of a typical Thick-billed Vireo (Fig. 7B), which quickly responded to playback of the tape made at Cape Florida. Sonograms made at the Florida Museum of Natural History Bioacoustics Laboratory show that the bird taped in Florida and the bird taped in the Bahamas made essentially identical sounds. The Thick-billed Vireo on Hypoluxo Island was attracted to, and also scolded like, the ones recorded both at Cape Florida and in the Bahamas. It also sang a rambling song (Bradley 1980) similar in phrasing to the corresponding song of a White-eyed Vireo. There is such variation in White-eyed Vireo phrasing (Borror 1987), however, that it might be difficult to use song for positive identification of a Thick-billed Vireo. To Smith's ear, the latter's song has a hoarser and more wiry quality.

The Thick-billed Vireo is the most likely member of the "white-eyed vireo complex" to occur as a vagrant along the southeast coast of Florida. Nevertheless, one or more of us examined specimens of most other members of the group, consisting of nine currently recognized species whose "...boundaries...are poorly understood" and "whose accurate definition awaits further research" (A.O.U. 1983). This examination revealed that the Cuban Vireo (*Vireo gundlachi*), is somewhat similar to the Thick-billed Vireo in morphology but is much more evenly and more brightly yellow (less olive) below. It also has less prominent wingbars, the white median covert tips being espe-

Figure 7. Scolding notes of Thick-billed Vireo: A. Cape Florida, Florida, September 14, 1989 (FMNHBA Master Tape No. 1146, Cut No. 13, P.W. Smith); B. Nassau, Bahamas, December 12, 1989 (FMNHBA Master Tape No. 1146, Cut No. 14, P.W. Smith); and White-eyed Vireo: C. Gainesville, Florida, June 1, 1977 (FMNHBA Master Tape No. 386, Cut No. 1, Species Cut No. 33, R.A. Bradley).



cially obsolete. Furthermore, it shows a fainter, yellower partial eye-ring but virtually no yellow tint to the lores at all; thus, it gives no impression of having spectacles. The two Cuban Vireo specimens at the UMRC measured by Evered had bill-size indices of 128 and 133, near the upper end of the range for the White-eyed Vireo but well below that for the Thick-billed Vireo.

Specimens of the Mangrove Vireo (*V. pallens*), from Yucatan and the Caribbean slope of Central America examined by Smith at the USNM seemed smaller than even White-eyed Vireos. They also seemed to lack an eye-ring but showed yellow lores and bright yellow underparts. Thus, they would look considerably different from the Thick-billed Vireos either at Cape Florida or Hypoluxo Island. Apparently, the specimens examined were all of a yellow morph of this species, since grayer birds also occur in these populations (Parkes 1990). Both the Mangrove and Cuban vireos have songs different from either the White-eyed or the Thick-billed Vireos (Barlow 1981). The other species of vireo in the "white-eyed vireo complex" are even more distinctive and therefore are not discussed.

The Thick-billed Vireo occurs virtually throughout the Bahama Islands south to the Caicos Bank, as well as on Ile de la Tortue (north of Hispaniola), the Cayman Islands, and Providencia and Santa Catalina Islands east of Nicaragua (A.O.U. 1983, Buden 1985). Major differences in song suggest that the populations off Nicaragua should possibly be classified separately or with the Mangrove Vireo (Barlow 1981). The species is probably a successful over-water colonizer, at least in the Bahamas, for it is found on most Bahamian cays. Buden collected the first specimen of the species from isolated Cay Sal, 155 kilometers south of Key Largo, Florida, in April 1968, and believed that a small breeding population then existed there. Earlier ornithologists, however, who visited Cay Sal around the turn of the century in the spring, failed to record the species (Buden and Schwartz 1968), so that colonization there may be recent.

Prevailing easterly winds in the region suggest that the small Bimini archipelago is a possible source of Bahamian vagrants to Cape Florida, as it is just 85 kilometers directly east. On a visit to South Bimini on September 19,

Table 2 Published pre-1989 reports of Thick-billed Vireos in Florida.

Date(s)	Location	Source
Feb. 4-5, 1961	Hypoluxo I., Palm Beach Co.	Abramson (1974)
April 25-May 10, 1964	Garden Key, Dry Tortugas	Robertson and Mason (1965)
Dec. 27, 1968	nr. Hypoluxo Village, Palm Beach Co.	DeBellevue and Langridge (1969)
Dec. 28, 1980-Jan. 6, 1981	nr. Flamingo, Everglades N.P.	Langridge (1982)
May 6, 1988	Hypoluxo I., Palm Beach Co.	Langridge (1988)*

*Unpublished descriptions by two observers (FOSRC No. 88-151) were not accepted by the Florida Ornithological Society Records Committee. As of March 1990, the committee had not evaluated any other report (J. Baker, W. George, pers. comm.).

1987, Smith saw 14 Thick-billed Vireos in two hours, all described in his field notes much like the birds at Cape Florida. The individual on Hypoluxo Island was slightly over 100 kilometers from the west end of Grand Bahama Island, where the Thick-billed Vireo is also a common resident (Emlen 1977). Although its date of arrival is unknown, it was discovered after a prolonged period of particularly strong easterly winds.

The published and unpublished descriptions for the five previously published sight reports of Thick-billed Vireos in southern Florida (Table 2), all reviewed by Smith, largely emphasize uniformly yellow underparts—not particularly a field mark of northern Thick-billed Vireo populations—rather than finer points such as bill size, shape and color. While these identifications may be correct, the status of the species in the United States has heretofore been somewhat questionable due to the absence of specimens or clear photographs (A.O.U. 1983). We believe that this uncertainty is no longer warranted, and that the Thick-billed Vireo should be admitted without qualification to the North American list.

The presence of an interacting threesome at Cape Florida raises the interesting possibility that they may have been a locally breeding family group. In coastal Massachusetts, juvenile White-eyed Vireos usually appear at the Manomet Bird Observatory in August, where they complete their molt (including body, tail, and a partial wing molt), before migrating in late September or early October (Lloyd-Evans 1983). They are said to engage in a post-fledging dispersal into the area, presumably from fairly nearby; however, their actual breeding location relative to Manomet is unknown (T. Lloyd-Evans pers. comm.). If the

closely related Thick-billed Vireo also disperses before molting, immature birds at Cape Florida might not have fledged locally. It is possible that they came from the Bahamas after fledging, but before beginning their molt. Strong territorial behavior observed in the individual on Hypoluxo Island, however, does raise the possibility that the Thick-billed Vireo may be in the process of colonizing coastal Florida, if it has not already done so.

Several unpublished photos from Cape Florida taken by George Wagner on September 19, 1989, along with copies of other in-hand photos from Hypoluxo Island taken on March 10, 1990, by Evered and Messick, have been deposited in the archives of the Florida Ornithological Society at the Florida Museum of Natural History (FMNH No. FOS 77). We particularly wish to thank Lyn Atherton, Robert O'Brien, and George Wagner for providing photos or tapes of the vireos at Cape Florida for analysis; John and Geri Muehlebach for allowing us access to their property on Hypoluxo Island; Philip Angle, Jonathan Atwood, Carla Dove, Jerry Ford, William Hardy, Oscar Owre, and Thomas Webber for providing access to collections, data, and other resources; Jocelyn Baker, Richard Banks, Jon Barlow, Ralph Browning, Donald Buden, Walter George, William Hardy, Howard Langridge, Roxie Laybourne, Trevor Lloyd-Evans, Robert Odear, and Van Remsen for providing information and expert opinions; and Virginia Edens, Susan Smith, and Jill Weech for help in the field. Evered and Messick thank the Cincinnati Museum of Natural History and the Biology Department of the University of Cincinnati for financial support and the Ministry of Agriculture, Bahamas, for permission to conduct field research on Abaco. William

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LITERATURE CITED

- ABRAMSON, I. J. 1974. A possible Thick-billed Vireo (*Vireo crassirostris*) in the United States. *Am. Birds* 28: 881.
- American Ornithologists' Union. 1983. The A.O.U. check-list of North American birds. 6th edition. American Ornithologists' Union, Washington.
- BARLOW, J. C. 1981. Songs of the Vireos and their allies. ARA No. 7. ARA Records, Gainesville, Fla.
- BOND, J. 1985. Birds of the West Indies. 5th edition, Collins, London.
- BORROR, D. J. 1987. Song in the White-eyed Vireo. *Wilson Bull.* 99: 377-397.
- BRADLEY, R. A. 1980. Vocal and territorial behavior in the White-eyed Vireo. *Wilson Bull.* 92: 302-311.
- BUDEN, D. W. 1985. New subspecies of Thick-billed Vireo (Aves: Vireonidae) from the Caicos Islands, with remarks on the taxonomic status of other populations. *Proc. Biol. Soc. Wash.* 98: 591-597.
- _____, and Schwartz, A. 1968. Reptiles and birds of the Cay Sal Bank, Bahama Islands. *Quart. J. Florida Acad. Sci.* 31: 290-320.
- DeBELLEVUE, E., and LANGRIDGE, H.P. (compilers). 1969. West Palm Beach, Fla. (1968 Christmas Count). *Audubon Field Notes* 23: 252-253.
- DWIGHT, J., Jr. 1900. The sequence of plumages and moults of the passerine birds of New York. *Ann. New York Acad. Sci.* 13: 73-360.
- EMLEN, J. T. 1977. Land bird communities of Grand Bahama Island: the structure and dynamics of an avifauna. *Orn. Monog.* No. 24.
- LANGRIDGE, H.P. 1982. A Thick-billed Vireo sighting for Everglades National Park. *Florida Field Nat.* 10: 22.
- _____, (Ed.). 1988. Florida Region (Spring 1988 field notes), *Am Birds* 42: 424-426.
- LLOYD-EVANS, T. L. 1983. Incomplete molt of juvenile White-eyed Vireos in Massachusetts. *J. Field Ornithol.* 54: 50-57.
- National Geographic Society. 1983. Field guide to the birds of North America. National Geographic Society, Washington.
- PARKES, K. C. 1990. A revision of the Mangrove Vireo (*Vireo pallens*) (Aves: Vireonidae). *Ann. Carnegie Mus.* 59: 49-60.
- PYLE, P., HOWELL, S. N. G., YUNICK, R. P., and DeSANTE, D. F. 1987. Identification guide to North American passerines. Slate Creek Press, Bolinas, California.
- ROBERTSON, W. B., Jr., and MASON, C. R. 1965. Additional bird records from the Dry Tortugas. *Florida Nat.* 38: 131-138.
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