Breeding Range Extension of the Acadian Flycatcher

The discovery of a nest of the Acadian Flycatcher (*Empidonax virescens*) on Sideline 26, Pickering Township, Ontario County, constitutes the first definite breeding record for the species north of Haldimand County. A hanging nest, constructed of grass and lined with dry leaf midribs, was found on 9 July 1973. The nest was positioned about 2.5 m from the bole of a sugar maple (*Acer saccharum*) and 3 m from the ground. (This nest is now specimen number 11440 in the Royal Ontario Museum.) The female (presumed from lack of song) was observed sitting on the nest for periods of 5 to 10 minutes on 9 July and 11 July, but the single egg was not laid until 12 July. Hatching occurred on 26 or 27 July and the chick had fledged by 2 August, when the male was observed feeding it.

Although the Acadian Flycatcher cannot be distinguished from other eastern *Empidonax* species by sight, its song is immediately distinguishable. The male of this nesting pair sang frequently and was immediately recognized as being of this species when first heard on 31 May 1973. In addition, the Acadian Flycatcher is the only *Empidonax* species which builds a nest suspended in the fork of a branch.

W. E. Godfrey (1966. The birds of Canada. National Museum of Canada Bulletin 203. 428 pp.) states that the Acadian Flycatcher has been recorded without evidence of breeding at Toronto. The northernmost previous breeding record is at Dunnville on Lake Erie (Ontario Nest Records Scheme). A nest of the species (no observation of breeding), however, was seen by E. Pegg (personal communication) in Uxbridge Township, Ontario County, in 1966.

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Vertebral Frequencies with Notes on Anomalies in Samples of Threespine Sticklebacks (*Gasterosteus aculeatus* L.) from Eastern North America

Abstract. Samples of the threespine stickleback *Gasterosteus aculeatus* taken from Baffin Island south to Cape Cod in eastern North America were examined for vertebral number and for vertebral fusion. There was no evidence for clinal variation in vertebral number, and vertebral number could not be associated with types of habitat. Vertebral fusions are reported for the first time in eastern Atlantic populations of *G. aculeatus* and were noted also in the discrete Pacific populations of the species complex. Other eastern North American sticklebacks, *Apeltes quadracus* and *G. wheatlandi,* also had fused vertebrae in some individuals. Adverse temperature during ontogeny is suggested as a major factor causing vertebral fusion.

The threespine stickleback is found in coastal and fresh waters of eastern North America from Baffin and Devon Islands south to Chesapeake Bay. It occurs across Europe and Russia and on the Pacific coast of North America (McPhail and Lindsey 1970).

Radiographs of 27 samples, drawn mainly from the collections of the National Museum of Canada, were examined for total vertebral number (Table 1) and for evidence of vertebral fusion (Table 2). The urostyle was counted as one vertebra. Further details of the samples are on file at the National Museum of Canada, Ottawa.

Vertebral numbers fall within the ranges recorded by Garside and Hamor (1973) for samples from a more limited area in eastern Canada. Their counts of vertebrae did not include the urostyle. Analysis of variance indicates that the major differences observed between the populations are statistically significant. No clinal variation in vertebral number was evident. Vertebral number could not be associated with pelagic or fluvial habitats as determined from capture data (Hagen and Gilbertson 1972). Without more detailed knowledge of migrations, however, this conclusion must remain tentative. Garside and Hamor (1973) consider temperature as an important environmental variable affecting vertebral number during ontogeny. It is pertinent to note that samples NMC 59-398 and NMC 59-433 have significantly different vertebral counts ($P < 0.05$) although their provenance is very close (Table 1). The temperature regimes in a small pool compared to a lake may be quite different, and this lends support to the contention of Garside and Hamor.

Seven samples contained from one to three individuals with fused vertebrae (Figure 1). Types of fusion included partially discrete and indistinguishable fusions of centra and some fusions of haemal and neural arches. These specimens were not included in the total vertebrae counts. The position of the fused vertebrae in the vertebral column is summarized in Table 2. Two samples of threespine sticklebacks from the Pacific coast of North America were examined for comparative purposes. One individual (NMC 59-90) from a sample of 24 taken in Bertrand Creek, British Columbia had vertebrae 12–14 fused. One individual (NMC 61-85) from a sample of 29 taken in Prince William Sound, Alaska had vertebrae 14–15 fused. Fused vertebrae are thus common to the discrete American Atlantic and Pacific populations.

Other species of sticklebacks in eastern North America have fused vertebrae. A sample of the blackspotted stick-

TABLE 2 — Position of fused vertebrae in threespine sticklebacks of eastern North America. Table 1 has location details. (A = abdominal vertebrae; C = caudal vertebrae.)

Collection	Standard length, mm	Fused vertebrae
NMC 66-177	49	18–19, 20–21 C
NMC 67-160	56	24–26, 32–33 C
,,	55	27–28 C
Matamek River, Québec	62	26–27 C
NMC 60-223	54	8–10 A
NMC 64-862	35	17–18 C
,,	32	23–25 C
,,	28	26–27 C
NMC 58-324	43	18–20 C
NMC 65-335	44	14–16 C

TABLE 1 — Total vertebral numbers in samples of the threespine stickleback from eastern North America. Samples are listed from north to south. (F = freshwater sample; M = marine sample; NMC = National Museum of Canada collection number.)

Collection number	Location	Habitat	Standard length, mm	Number	Total vertebrae		
					Range	Mean	Standard error
NMC 67-150,	N.W.T., Baffin Island, Nettilling Lake 66°30′ N, 70°40′ W	F	39–48	6	32–33	32.33	0.21
NMC 60-278, 60-280,	N.W.T., Baffin Island, Lake Harbour 62°51′ N, 69°53′ W	F	41–55	3	31–32	31.66	—
NMC 59-398,	Québec, Ungava Bay, Bobs Lake 59°00′ N, 66°15′ W	F	35–55	11	31–33	31.64	0.20
NMC 59-433,	Québec, Ungava Bay, pool near Bobs Lake 59°00′ N, 66°15′ W	F	35–55	37	32–34	32.35	0.09
NMC 58-356,	Québec, Ungava, Lake Canichico 56°47′ N, 68°51′ W	F	37–57	29	32–34	32.59	0.11
NMC 60-79,	Labrador, lake north of Nain ca 56°43′ N, 61°38′ W	F	33	1	33	33	—
NMC 63-226,	Québec, Hudson Bay, Charr Lake 56°21′ N, 76°29′ W	F	25–49	18	31–33	32.00	0.11
NMC 67-160,	Québec, Hudson Bay, Richmond Gulf. 56°13′ N, 76°20′ W	M?	43–66	32	31–35	32.88	0.13
NMC 69-379,	Labrador, Sandgirt Lake 53°52′ N, 65°17′ W	F	30–49	3	33–34	33.33	—
NMC 66-177,	Newfoundland, brook into White Bight 51°36′ N, 55°53′ W	F	37–56	49	31–33	31.96	0.07
NMC 60-76,	Québec, Belle Isle Strait 51°25′ N, 57°08′ W	M	60–62	2	32–33	32.50	—
	Québec, near Sept Iles, Matamek Lake 50°22′ N, 65°54′ W	F	30–49	46	32–34	32.85	0.08
	Québec, near Sept Iles, Bill Lake 50°21′ N, 66°07′ W	F	31–49	34	30–33	32.00	0.11
	Québec, near Sept Iles, Matamek River 50°17′ N, 65°58′ W	F	48–74	39	31–34	32.48	0.12
	Québec, near Sept Iles, Amory Cove 50°17′ N, 65°57′ W	M	35–74	68	31–34	31.86	0.09
NMC 60-223,	Québec, Rimouski River 48°27′ N, 68°32′ W	F	46–59	54	32–34	32.82	0.07

TABLE 1 — (*Continued*)

Collection number	Location	Habitat	Standard length, mm	Number	Total vertebrae		
					Range	Mean	Standard error
NMC 71-54,	New Brunswick, Burnt Church River 47°13′ N, 65°07′ W	F	46–61	12	30–34	31.77	0.23
NMC 66-189,	Newfoundland, Avalon Peninsula, St. Mary's Bay 47°04′ N, 53°34′ W	M	24–58	36	31–34	32.28	0.12
NMC 59-297,	Nova Scotia, south-west Cape Breton Park 46°40′ N, 60°55′ W	F	32–41	16	30–33	31.75	0.22
NMC 71-66,	New Brunswick, Northumberland Co., stream at New Doaktown Bridge 46°33′ N, 66°08′ W	F	32–52	40	31–33	31.80	0.10
NMC 58-317,	Prince Edward Island, Hunter River 46°26′ N, 63°19′ W	F	31–43	22	31–33	32.23	0.11
NMC 64-862,	Québec, Priest Creek near Ottawa 45°44′ N, 75°35′ W	F	26–49	22	32–33	32.36	0.11
NMC 58-324,	Nova Scotia, Oxford 45°44′ N, 63°52′ W	F	21–47	17	29–32	31.41	0.23
NMC 67-177,	Québec, Quyon River 45°43′ N, 76°24′ W	F	31–42	34	31–32	31.41	0.09
NMC 65-335,	New Brunswick, St. John River 45°28′ N, 66°08′ W	F?	33–55	18	31–33	32.10	0.16
NMC 66-215,	New Brunswick, Magaquadavic River 45°07′ N, 66°54′ W	F	38–53	28	30–33	31.64	0.13
NMC 64-688,	Massachusetts, Wellfleet, Cape Cod 41°57′ N, 70°02′ W	M	48–58	5	31–32	31.60	0.24

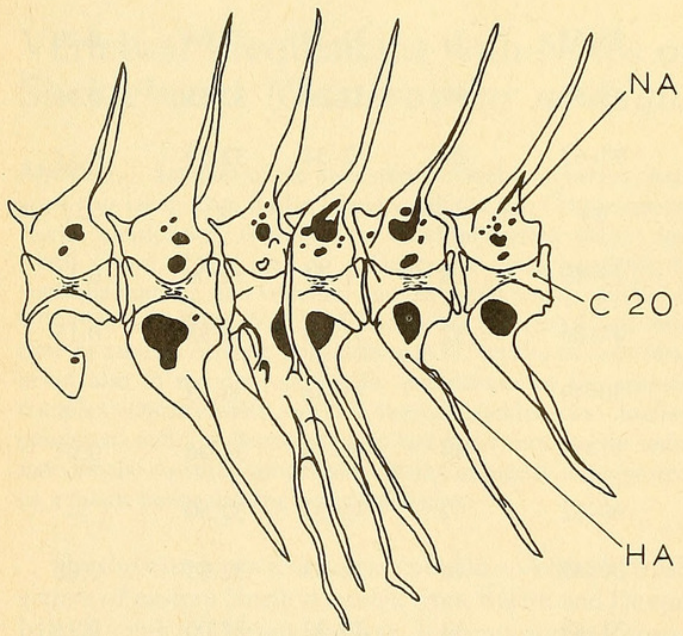

FIGURE 1. Left lateral view of caudal vertebrae of 35-mm standard length *Gasterosteus aculeatus* (NMC 64-862). Note fusion of vertebral centra 17 and 18 and displacement of haemal arches. (C20 = vertebral centrum 20; HA = haemal arch and spine; NA = neural arch and spine).

leback, *Gasterosteus wheatlandi,* from Amory Cove, Quebec was found to contain eight such individuals from a sample size of 56 (Coad and Power 1973a). Both marine and freshwater populations of the fourspine stickleback, *Apeltes quadracus,* may have fused vertebrae (a single individual from each of the samples examined by Coad and Power (1973b)). Palistrophic conditions have not been reported before for these stickleback species.

The degree of fusion in these individuals was not extensive and probably had little effect on their survival ability since many of them were adult fish in their final year of life. The most likely cause of fusion is adverse temperature conditions during ontogeny. Sticklebacks breed in tidal pools or in marginal lake or river vegetation, where marked temperature fluctuations occur during the breeding season (e.g., see Coad and Power, 1973a). The diversity of habitats sampled and the occurrence of this condition in several species would seem to preclude parasitic invasion as a common cause of vertebral fusion. Hereditary factors may play a part but this aspect was not examined.

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Debilitated Condition of Warblers Encountered at Parc Daniel, Gaspé Peninsula

On 12 June 1973, while camping at Parc Daniel, my wife and I encountered two Yellow-bellied Flycatchers (*Empidonax flaviventris*) and eight warblers on the ground and so feeble in the majority of cases that one could catch them readily. The eight warblers consisted of four Bay-breasted (*Dendroica castanea*), and two each of Black-throated Green (*D. virens*) and Magnolia (*D. magnolia*) Warblers. No other species, of either birds or small mammals, of which there were numbers at the park, appeared to be affected. It seemed unlikely, therefore, that a toxic substance such as DDT or Fenitrothion was involved, although this could not be ruled out. A more likely possibility in our minds was that owing to the effects of an unusually cold wet spring, this collection of small fly-catching species was suffering from malnutrition. June 12, unlike the preceding day, was a relatively cold one on which we saw few flying insects of any kind.

It should be noted that none of these birds were injured and none appeared to be ill, the plumages of all of them being in good condition. The first bird I picked up was in the woods 100 m from the camping ground, at 0500 hours. It was a male Bay-breasted Warbler that, when liberated, was able to get up into a low sapling, then to fly feebly to the branch of a balsam. It then moved slowly about in the branches as if looking for prey, staying nearby for some time.

I saw a male Magnolia Warbler on the ground and in a somewhat similar condition an hour later. This was about 2 km from the park. Between these two situations and between 1600 and 1700 hours, we encountered all of the other eight birds along a little-used lumber road. We first stopped the car on encountering a pair of Bay-breasted Warblers. They let me come within 0.3 m and moved away only slowly, as was true of the two flycatchers, one which I picked up, and of the other warblers.

As none of the birds was injured, their presence on the lumber road and in the vicinity of the park seemed to have little to do with these situations and suggested that many others of the same or other species in a similar condition might have been located, if one could have searched the woodlands effectively.

Since writing the above it has been brought to my attention that the debilitated condition might have been a case of birds' just arriving after a long flight, with pre-migratory energy reserves completely exhausted. Against this is the fact that 12 June was a very late date for such birds to be still migrating, especially in 1973.

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