PA FISH AND BOAT COMMISSION
COMMENTS AND RECOMMENDATIONS
June 8, 1992

Code: 01765

WATER: Sixpenny Creek (603D) Berks Co.

EXAMINED: July 1994

BY: Soldo, Wnuk, Eden, and Gottesfeld

Bureau Director Action: Approved - Delano R Hall Date: 5-29-96

Division Chief Action: Richard A Snyder Date: 5-28-96

WW Unit Leader Action: _____ Date: _____

CW Unit Leader Action: R. Thomas Weirich Date: 5/28/96

AREA COMMENTS:

Sixpenny Creek (Ck.) is a 5.9 km long stream located in sub-subbasin 3D, Union Township, Berks County. Sixpenny Ck. was initially examined by Kaufmann and Mayers in 1983. These investigators documented a Class A wild brook trout population upstream from Sixpenny Lake, a 0.81 ha Civilian Conservation Corps impoundment on the main stem of Sixpenny Ck. Kaufmann and Mayers recommended permanent breaching of the dam at Sixpenny Lake because warm surface water discharges from the lake were negatively impacting wild trout populations downstream.

The dam at Sixpenny Lake was breached through removal of "stop logs" or "slash boards" in 1990. Following the breaching, wild trout population density downstream from the lake increased to Class A levels.

AREA RECOMMENDATIONS:

1. The Pennsylvania Department of Environmental Protection should upgrade the Chapter 93 water quality classification of Sixpenny Creek from the headwaters downstream to the downstream limit of French Creek State Park to Exceptional Value Cold Water Fishery.

2. The Pennsylvania Department of Environmental Protection should upgrade the Chapter 93 water quality classification of Sixpenny Creek from the downstream limit of French Creek State Park downstream to the mouth to High Quality Cold Water Fishery.

3. The Pennsylvania Fish and Boat Commission should continue to manage the wild trout population in Sixpenny Creek with conventional, statewide angling regulations.

4. Promotion of Sixpenny Creek as a Class A wild brook trout stream should be limited due to the susceptibility of brook trout to overharvest and the stream's close proximity to urban areas.

Sixpenny Creek (603D) **Berks Co.**

CW UNIT COMMENTS:

Sixpenny Creek (603D), Section 01, was examined during July 1994 to examine the status of the coldwater fishery following the permanent drawdown of Sixpenny Lake in 1990.

Sixpenny Creek can be characterized as a small coldwater stream. The 1994 inventory was conducted at two sample sites. Sampling at the upstream site (RM 2.20) recorded the presence of seven fish species, including an outstanding wild brook trout fishery estimated in excess of 87 kg/ha. The inventory conducted at the downstream site (RM 0.60) documented the presence of 10 fish species, including an excellent Class A wild brown trout fishery estimated in excess of 46 kg/ha. Overall, the wild trout fishery has benefitted from the permanent drawdown of Sixpenny Lake as total trout biomass has increased from a biomass Class C to a biomass Class A density.

CW UNIT RECOMMENDATIONS:

1. Sixpenny Creek (603D), Section 01, should continue to be managed as a Class A wild trout fishery. Conventional statewide regulations should apply with no stocking.

2. Due to the presence of an outstanding wild brook trout fishery, which is a rarity in this region of the Commonwealth, the DEP Water Quality Standards should be upgraded to EV for Sixpenny Creek from the headwaters downstream to downstream limit of French Creek State Park. A copy of this report should be forwarded to DEP via Environmental Services.

3. Due to the presence of an excellent wild brook and brown trout fishery, the DEP Water Quality Standards should be upgraded to HQ-CWF. The special protected use designation should be extended to the Sixpenny Creek basin from the lower French Creek State Park boundary downstream to the mouth. A copy of this report should be forwarded to DEP via Environmental Services.

PENNSYLVANIA FISH AND BOAT COMMISSION
BUREAU OF FISHERIES
FISHERIES MANAGEMENT DIVISION

Sixpenny Creek (603D)
Fisheries Management Report

Prepared by
R. Wnuk and M. Kaufmann

Date Sampled: July 1994 Date Prepared: January 1995

Introduction

Sixpenny Creek (Ck.) is a 5.9 km (3.7 mi.) long stream located in sub-subbasin 3D, Union Township, Berks County (Co.). The Pennsylvania Department of Environmental Protection (DEP) currently classifies the portion of Sixpenny Creek from the headwaters downstream to an unnamed tributary at River Mile (RM) 1.28 as a High Quality Cold Water Fishery (HQ-CWF) in its Chapter 93 water quality standards. The DEP classifies the remainder of the stream as a Cold Water Fishery (CWF), while the additional designation of Migratory Fishes (MF) applies to the entire length of Sixpenny Ck. due to the presence of American eels (*Anguilla rostrata*). Map coverage for Sixpenny Ck. is provided on the Birdsboro and Elverson, PA, USGS 7.5 minute Quadrangles (Fig. 1). Further background information on Sixpenny Ck. is provided by Kaufmann and Mayers (1983).

Kaufmann and Mayers (1983) performed the initial Pennsylvania Fish and Boat Commission (PFBC) inventory of Sixpenny Ck. This survey documented the presence of a Class A (32.94 kg/ha) wild brook trout (*Salvelinus fontinalis*) population in the headwaters of the stream upstream from Sixpenny Lake, a 0.81 ha (2.00 ac) impoundment constructed on the main stem of Sixpenny Ck. by the Civilian Conservation Corps in the 1930s (Pennsylvania Department of Environmental Resources 1989). Wild trout populations were depressed downstream from Sixpenny Lake due to documented warm surface water discharges from this small impoundment. Summer discharge temperatures exceeded the upper temperature tolerance limit of 24°C (74°F) for brook trout. Consequently, Kaufmann and Mayers (1983) recommended that Sixpenny Lake be permanently drawn down, a proposition that was rebuffed by the Bureau of State Parks Director for five years. The investigators predicted that breaching Sixpenny Lake would result in a downstream extension of the wild brook trout population at least as far as the confluence of Sixpenny Creek with the unnamed tributary at RM 1.28. Further downstream extension of the wild brook trout population was considered possible as well.

Sixpenny Lake was permanently drawn down in 1990 (Hesser 1990) through removal of the "stop logs" or "slash boards" from the dam. The objective of the present survey was to assess the effects of the drawdown on the wild trout populations of Sixpenny Ck. downstream from Sixpenny Lake.

Methods

The examination of Sixpenny Ck. was conducted on July 19 and 20, 1994. All procedures of the survey were carried out according to those outlined by Marcinko et al. (1986).

Sixpenny Ck. was considered to be a single section extending from the headwaters to the mouth. Two representative sampling sites were chosen in Section 01. Site 0102 was located at the SR 345 bridge and was 311 m long. Site 0103 was located 240 m downstream from the SR 2083 bridge and was 300 m long. Sites 0102 and 0103 were situated approximately 744 m and 3,410 m, respectively, downstream from Sixpenny Dam. Both station locations were identical to the 1983 survey except that Site 0102 was extended an additional 11 m at its upstream end due to changes in physical habitat. Site locations are depicted on Figure 1.

Physical-chemical parameters, the aquatic macroinvertebrate community and the fish community were evaluated at both stations. Aquatic macroinvertebrates were collected by kick screens and hand picking rocks. Aquatic macroinvertebrates were generally identified to the familial level, and were assigned pollution tolerance index values according to a combination of those developed by or through Illinois EPA (1989), EA Mid-Atlantic Regional Operations Engineering, Science and Technology, Inc. (1990), Klemm et al. (1990), RMC Environmental Services, Inc. (1991), and PFBC field experience. The fish community was sampled with a backpack electrofishing unit using 150 volts of alternating current. Fish species were assigned a subjective abundance index based on the number of individuals captured per 300 m of stream. Wild trout populations were quantified with a Chapman modified Petersen population estimate (Ricker 1975).

Results

Site 0102

Site 0102 was located in a densely shaded area of stream surrounded by a hardwood forest overstory and a spice bush (*Lindera benzoin*) understory. The stream banks were heavily overgrown with vines and thorny shrubs in several places. Bank erosion was moderate and the bottom substrate was primarily composed of sand, although some gravel was present. Water star grass (*Heteranthera dubia*) and moss were present in the stream bed. The stream was generally shallow and somewhat sluggish in this area, and was primarily composed of short pools and short riffles. Instream logs, undercut banks, undercut tree roots, overhanging vegetation, and a few deeper pools provided cover for fish.

Physical-chemical parameters measured at Site 0102 on July 19, 1994, were as follows: air temperature 23.0°C, water temperature 18.4°C, pH 6.4, specific conductance 42 umhos, total alkalinity 11 mg/l, and total hardness 12 mg/l (Table 1).

Aquatic macroinvertebrate diversity at Site 0102 was fair, as 19 taxa were collected (Table 2). The collection included four mayfly families, two stonefly families and three caddisfly families. No taxon was rated abundant. Four of the taxa collected, Ephemerellidae (a mayfly family), Leuctridae (a stonefly family), Peltoperlidae (a stonefly family), and Psychomyiidae (a caddisfly family), were considered very intolerant of pollution. The families Leuctridae and Peltoperlidae were not found at Site 0102 in 1983; they were only present upstream from Sixpenny Lake.

The fish community at Site 0102 consisted of seven species (Table 3), and was dominated by coldwater fishes. Brook trout and blacknose dace (*Rhinichthys atratulus*) were the species rated abundant. Migratory American eels were rated rare. The fish community at Site 0102 in 1994 was somewhat more diverse than that documented in 1983, when only four species were captured (Table 3). Brook trout were rated present in 1983.

Brook trout was the only gamefish species captured at Site 0102. A total of 138 minutes of electrofishing at the 311 m long station produced 187 individual brook trout ranging from 50 to 249 mm in total length (Fig. 2), all of which were wild fish. Of the 187 brook trout captured, 52 (27.8%) measured $\geq$150 mm in total length. Brook trout biomass and brook trout number per hectare were 87.70 kg/ha and 3,136 fish/ha, respectively (Table 4). In contrast, the 1983 survey captured only 14 wild brook trout ranging from 100 to 199 mm in total length (Fig. 2). Brook trout biomass and brook trout number per hectare were 6.10 kg/ha and 145 fish/ha, respectively (Table 4), in 1983.

Site 0103

Site 0103 was located in a densely shaded area of stream next to a single family rural residence. Bank erosion was light, and the bottom substrate was composed of silt, rubble and some sand. The station was primarily composed of long riffles separated by three deep pools. These pools provided the majority of cover for adult fish at the site.

Physical-chemical parameters measured at Site 0103 on July 20, 1994, were as follows: air temperature 26.0°C, water temperature 23.0°C, pH 7.2, specific conductance 95 umhos, total alkalinity 21 mg/l, and total hardness 48 mg/l (Table 1).

Aquatic macroinvertebrate diversity at Site 0103 was fair, as 17 taxa were collected (Table 2). The collection included two mayfly families, two stonefly families and four caddisfly families. Heptageniidae (a mayfly family) was the only taxon rated abundant. One of the taxa collected, Leuctridae (a stonefly family) was considered very intolerant of pollution.

The fish community at Site 0103 consisted of 10 species (Table 3), and was dominated by coldwater fishes and fish species common in streams that are transitional between a coldwater and a warmwater

environment. Brown trout (*Salmo trutta*), blacknose dace and longnose dace were the species rated abundant. Migratory American eels were rated rare. The fish community at Site 0103 in 1994 was fairly similar to that documented in 1983, when 11 species were captured (Table 3). Brown trout were rated common in 1983.

Brown trout and brook trout were the only gamefish species captured at Site 0103. A total of 112 minutes of electrofishing at the 300 m long station produced 116 individual brown trout ranging from 50 to 424 mm in total length (Fig. 4), and 29 individual brook trout ranging from 50 to 249 mm in total length (Fig. 3). All of the trout were wild fish. Of the 116 brown trout, 48 (41.4%) measured ≥150 mm in total length, and of the 29 brook trout, 27 (93.1%) measured ≥150 mm in total length. Brown trout biomass and brown trout number per hectare were 46.97 kg/ha and 1,101 fish/ha, respectively (Table 5). Brook trout biomass and brook trout number per hectare were 7.73 kg/ha and 218 fish/ha, respectively (Table 6). Total trout biomass and total trout number per hectare at Site 0103 in 1994 were 54.70 kg/ha and 1,319 fish/ha, respectively (Table 7).

In contrast, the 1983 survey at Site 0103 captured only 29 wild brown trout ranging from 125 to 274 mm in total length (Fig. 4), and 4 wild brook trout ranging from 150 to 274 mm in total length (Fig. 3). Brown trout biomass and brown trout number per hectare were 15.70 kg/ha and 156 fish/ha, respectively (Table 5). Brook trout biomass and brook trout number per hectare were 2.40 kg/ha and 20 fish/ha, respectively (Table 6). Total trout biomass and total trout number per hectare at Site 0103 in 1983 were 18.10 kg/ha and 176 fish/ha, respectively (Table 7).

Discussion

Sixpenny Ck. was best described as a small mountain trout stream. Physical-chemical values and aquatic macroinvertebrate community composition indicated very good overall water quality, although buffering capacity was somewhat low in the stretch of Sixpenny Ck. which flowed through French Creek State Park. No sources of significant water quality degradation in the Sixpenny Ck. drainage basin were identified during the present survey.

The breaching of the dam at Sixpenny Lake had a dramatic, positive effect on wild trout populations in Sixpenny Ck. As predicted by Kaufmann and Mayers (1983), the wild brook trout population greatly expanded at Site 0102, downstream from the lake. Brook trout biomass at this station increased from 6.10 kg/ha in 1983 to 87.70 kg/ha in 1994. This biomass estimate was the second highest wild brook trout biomass ever recorded in the southeastern Pennsylvania fisheries management region. Similarly, total wild trout biomass at Site 0103 increased from 18.10 kg/ha in 1983 to 54.70 kg/ha in 1994.

Breaching of the dam allowed the entire length of Sixpenny Ck. to attain a Class A wild trout biomass classification within the PFBC's trout stream classification system. Wild trout biomass at

the two sampling sites downstream from the dam increased from a mean of 12.1 kg/ha (Class C) in 1983 to a mean of 71.2 kg/ha (Class A) in 1994. Wild trout abundance in the 4.4 km (2.75 mi.) stretch of Sixpenny Ck. between the dam and the confluence with the Schuylkill River increased from an estimated 343 fish in 1983 to an estimated 2,983 fish in 1994. Within the French Creek State Park segment downstream from the dam wild brook trout abundance increased from 47 fish/km of stream in 1983 to 751 fish/km of stream in 1994.

In addition to the wild trout population, the aquatic macroinvertebrate community responded favorably to the breaching of Sixpenny Dam. Aquatic macroinvertebrate diversity improved at the sampling site closest to the dam, and more pollution sensitive taxa were present. These improvements did not occur at the downstream site, however, probably due to other human influences in the drainage basin between the two sites.

The Class A wild trout population in Sixpenny Ck. is primarily limited by habitat constraints. It is likely that the stream receives little fishing pressure due to its small size in the publicly owned section and because of the posted private property near the mouth. For these reasons, statewide regulations are adequate to protect and manage this fishery. The current DEP classifications, however, do not provide adequate water quality protection. With a Class A biomass, the entire length of the stream should at least be classified as HQ-CWF. Additionally, with its public ownership, the length of stream from the headwaters downstream to the downstream limit of French Creek State Park should be classified as an Exceptional Value-Cold Water Fishery (EV-CWF).

In conclusion, eliminating the negative impact of the warm water being discharged from Sixpenny Lake in 1990 resulted in an eleven-fold increase in the abundance of wild brook and brown trout between Sixpenny Dam and the Schuylkill River. Additionally, pollution intolerant aquatic macroinvertebrates expanded their ranges in this reach of stream. Elimination of the negative thermal impact of Sixpenny Dam on Sixpenny Ck. has greatly enhanced water quality, natural attributes and angling opportunities in Sixpenny Ck. The segment within French Creek State Park is now one of the top two wild brook trout streams in southeastern Pennsylvania.

Management Recommendations

1. The Pennsylvania Department of Environmental Protection should upgrade the Chapter 93 water quality classification of Sixpenny Creek from the headwaters downstream to the downstream limit of French Creek State Park to Exceptional Value-Cold Water Fishery.

2. The Pennsylvania Department of Environmental Protection should upgrade the Chapter 93 water quality classification of Sixpenny Creek from the downstream limit of French Creek State Park downstream to the mouth to High Quality-Cold Water Fishery.

3. The Pennsylvania Fish and Boat Commission should continue to manage the wild trout population in Sixpenny Creek with conventional, statewide angling regulations.

4. Promotion of Sixpenny Creek as a Class A wild brook trout stream should be limited due to the susceptibility of brook trout to overharvest and the stream's close proximity to urban areas.

Literature Cited

EA Mid-Atlantic Regional Operations Engineering, Science and Technology, Inc. 1990. Freshwater macroinvertebrate species list including tolerance values and functional feeding group designations for use in rapid bioassessment protocols. Prepared for the U.S. EPA, Washington, DC.

Hesser, R. 1990. Pennsylvania Fish and Boat Commission Environmental and Technical Liaison. Drawdown permit for Sixpenny Lake. PFBC files, Bellefonte, PA.

Illinois EPA. 1989. Biological stream characterization: a biological assessment of Illinois stream quality. Special Report #13, Illinois State Water Plan Task Force, Division of Water Pollution Control. Springfield, IL.

Kaufmann, M.L., and D. Mayers. 1983. Sixpenny Creek (603D) management report. PFBC files, Bellefonte, PA.

Klemm, D.J., P.A. Lewis, F. Fulk, and J.M. Lazorchak. 1990. Macroinvertebrate field and laboratory methods for evaluating the biological integrity of surface waters. U.S. EPA, Cincinnati, OH.

Marcinko, M., R. Lorson and R. Hoopes. 1986. Procedures for stream and river inventory information input. PFBC files, Bellefonte, PA.

Pennsylvania Department of Environmental Resources. 1989. Sixpenny Creek special protection evaluation report. Pennsylvania Department of Environmental Resources, Harrisburg, PA.

Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada Bulletin 191.

RMC Environmental Services, Inc. 1991. Post-diversion aquatic biology assessment for 1990. Prepared for the Philadelphia Electric Company, Philadelphia, PA.

Table 1. Physical-chemical parameters measured in Section 01 of Sixpenny Ck. (603D), Berks Co., in July of 1994.

Parameter	SITE 0102	SITE 0103
Date	7/19	7/20
Time (24 hour)	1115	1315
Air temperature (°C)	23.0	26.0
Water temperature (°C)	18.4	23.0
pH (standard units)	6.4	7.2
Specific conductance (umhos)	42	95
Total alkalinity (mg/l)	11	21
Total hardness (mg/l)	12	48

Table 2. Aquatic macroinvertebrate taxa collected in Section 01 of Sixpenny Ck. (603D), Berks Co., in July of 1994.

Taxon	SITE 0102	SITE 0103	PTI
Ephemeroptera			
Caenidae	X	X	7
Ephemerellidae	X	X	2
Heptageniidae	X	*	4
Siphlonuridae	X	X	7
Plecoptera			
Leuctridae	X	X	1
Perlidae		X	3
Peltoperlidae	X	X	1
Coleoptera			
Elmidae	X	X	8
Psephenidae		X	6
Trichoptera			
Hydropsychidae		X	4-8
Hydroptilidae		X	5
Limnephilidae	X	X	4
Philopotamidae	X	X	6
Psychomyiidae	X	X	2
Odonata			
Aeshnidae	X	X	8
Calopterygidae	X	X	5
Cordulegastridae	X	X	3
Gomphidae		X	4
Libellulidae	X	X	9
Diptera			
Chironomidae	X	X	0-10
Tabanidae		X	6
Tipulidae	X	X	4
Megaloptera			
Corydalidae	X	X	6
Hemiptera			
Gerridae	X	X	NA
Veliidae	X	X	NA
Decapoda			
Cambaridae		X	6
Opisthopora		X	10
Total taxa	19	17	

X = Present at Site; * = Abundant at Site.

PTI = Pollution Tolerance Index. PTI ranges from 0 (very intolerant of pollution) to 10 (very tolerant of pollution).

Table 3. Fish species captured by backpack electrofishing in Section 01 of Sixpenny Ck. (603D), Berks Co., in July of 1994 and April of 1983.

Scientific name	Common name	SITE 0102		SITE 0103	
		1994	1983	1994	1983
Salmo trutta	Brown trout			A	C
Salvelinus fontinalis	Brook trout	A	P	C	P
Clinostomus funduloides	Rosyside dace	R			
Exoglossum maxillingua	Cutlips minnow	P			X
Cyprinella spiloptera	Spotfin shiner				X
Rhinichthys atratulus	Blacknose dace	A	X	A	A
Rhinichthys cataractae	Longnose dace			A	X
Semotilus atromaculatus	Creek chub	C	X	C	X
Semotilus corporalis	Fallfish			R	
Catostomus commersoni	White sucker	P	X	P	X
Anguilla rostrata	American eel	R		R	X
Lepomis cyanellus	Green sunfish			R	X
Etheostoma olmstedi	Tessellated darter			R	P
Total species		7	4	10	11

Subjective Abundance Index (based on a 300 m long site):

A = Abundant (>100); C = Common (26 - 100); P = Present (3 - 25); R = Rare (< 3); X = species was captured at the site but was not assigned an abundance rating.

Table 4. Brook trout population estimate for Site 0102 of Sixpenny Ck. (603D), Berks Co., determined in July of 1994 and April of 1983[1].

Length group (mm)	1994				1983			
	N	#/ha	#/km	kg/ha	N	#/ha	#/km	kg/ha
50 - 74	36	482	116	1.45	0	0	0	0.00
75 - 99	7	94	22	0.75	0	0	0	0.00
100 - 124	83	1112	267	18.91	2	21	7	0.40
125 - 149	44	590	141	20.04	6	62	20	1.90
150 - 174	32	429	103	16.72	3	31	10	1.60
175 - 199	23	308	74	17.87	3	31	10	2.20
200 - 224	7	94	22	8.72	0	0	0	0.00
225 - 249	2	27	6	3.24	0	0	0	0.00
Totals	234	3136	751	87.70	14	145	47	6.10

[1]A Petersen population estimate was not possible at Site 0102 in 1983 because not enough fish were captured for the estimate to be reliable. The estimate provided here is based on the total number of fish captured.

N = Population estimate at site.
#/ha = Estimated number of fish per hectare.
#/km = Estimated number of fish per kilometer.
kg/ha = Biomass estimate in kilograms per hectare.

Site 0102 was 311 m long and averaged 2.4 m in width in 1994. It was 300 m long and averaged 3.2 m in width in 1983.

Table 5. Brown trout population estimate for Site 0103 of Sixpenny Ck. (603D), Berks Co., determined in July of 1994 and April of 1983[1].

Length group (mm)	1994				1983			
	N	#/ha	#/km	kg/ha	N	#/ha	#/km	kg/ha
50 - 74	16	116	53	0.23	0	0	0	0.00
75 - 99	81	587	270	1.76	0	0	0	0.00
100 - 124	0	0	0	0.00	0	0	0	0.00
125 - 149	0	0	0	0.00	2	11	7	0.40
150 - 174	10	72	33	3.84	11	59	37	2.80
175 - 199	23	167	77	9.83	1	5	3	0.30
200 - 224	4	29	13	2.09	2	11	7	1.30
225 - 249	7	51	23	7.15	10	54	33	8.00
250 - 274	7	51	23	8.88	3	16	10	2.90
275 - 299	2	14	7	4.00	0	0	0	0.00
300 - 324	0	0	0	0.00	0	0	0	0.00
325 - 349	0	0	0	0.00	0	0	0	0.00
350 - 374	1	7	3	3.77	0	0	0	0.00
375 - 399	0	0	0	0.00	0	0	0	0.00
400 - 424	1	7	3	5.42	0	0	0	0.00
Totals	152	1101	505	46.97	29	156	97	15.70

[1]A Petersen population estimate for brown trout was not possible at Station 0103 in 1983 because not enough fish were captured for the estimate to be reliable. The estimate provided here is based on the total number of fish captured.

N = Population estimate at site.
#/ha = Estimated number of fish per hectare.
#/km = Estimated number of fish per kilometer.
kg/ha = Biomass estimate in kilograms per hectare.

Station 0103 was 300 m long. It averaged 4.6 m in width in 1994 and 6.2 m in width in 1983.

Table 6. Brook trout population estimate for Site 0103 of Sixpenny Ck. (603D), Berks Co., determined in July of 1994 and April of 1983[1].

Length group (mm)	1994				1983			
	N	#/ha	#/km	kg/ha	N	#/ha	#/km	kg/ha
50 - 74	11	80	37	0.16	0	0	0	0.00
75 - 99	7	51	23	0.30	0	0	0	0.00
100 - 124	0	0	0	0.00	0	0	0	0.00
125 - 149	0	0	0	0.00	0	0	0	0.00
150 - 174	1	7	3	0.30	1	5	3	0.20
175 - 199	5	36	17	2.39	0	0	0	0.00
200 - 224	3	22	10	1.91	1	5	3	0.60
225 - 249	3	22	10	2.67	1	5	3	0.70
250 - 274	0	0	0	0.00	1	5	3	0.90
Totals	30	218	100	7.73	4	20	12	2.40

[1]A Petersen population estimate for brook trout was not possible at Station 0103 in 1983 because not enough fish were captured for the estimate to be reliable. The estimate provided here is based on the total number of fish captured.

N = Population estimate at site.
#/ha = Estimated number of fish per hectare.
#/km = Estimated number of fish per kilometer.
kg/ha = Biomass estimate in kilograms per hectare.

Site 0103 was 300 m long. It averaged 4.6 m in width in 1994 and 6.2 m in width in 1983.

Table 7. Summary of wild trout biomass estimates at Sites 0102 and 0103 of Sixpenny Ck. (603D), Berks Co., in 1994 and 1983.

	SITE 0102		SITE 0103	
Estimator	1994	1983	1994	1983
Brook trout biomass (kg/ha)	87.70	6.10	7.73	2.40
Estimated # brook trout/ha	3,136	145	218	20
Brown trout biomass (kg/ha)	0.00	0.00	46.97	15.70
Estimated # brown trout/ha	0	0	1,101	156
Total trout biomass (kg/ha)	87.70	6.10	54.70	18.10
Total # trout/ha	3,136	145	1,319	176

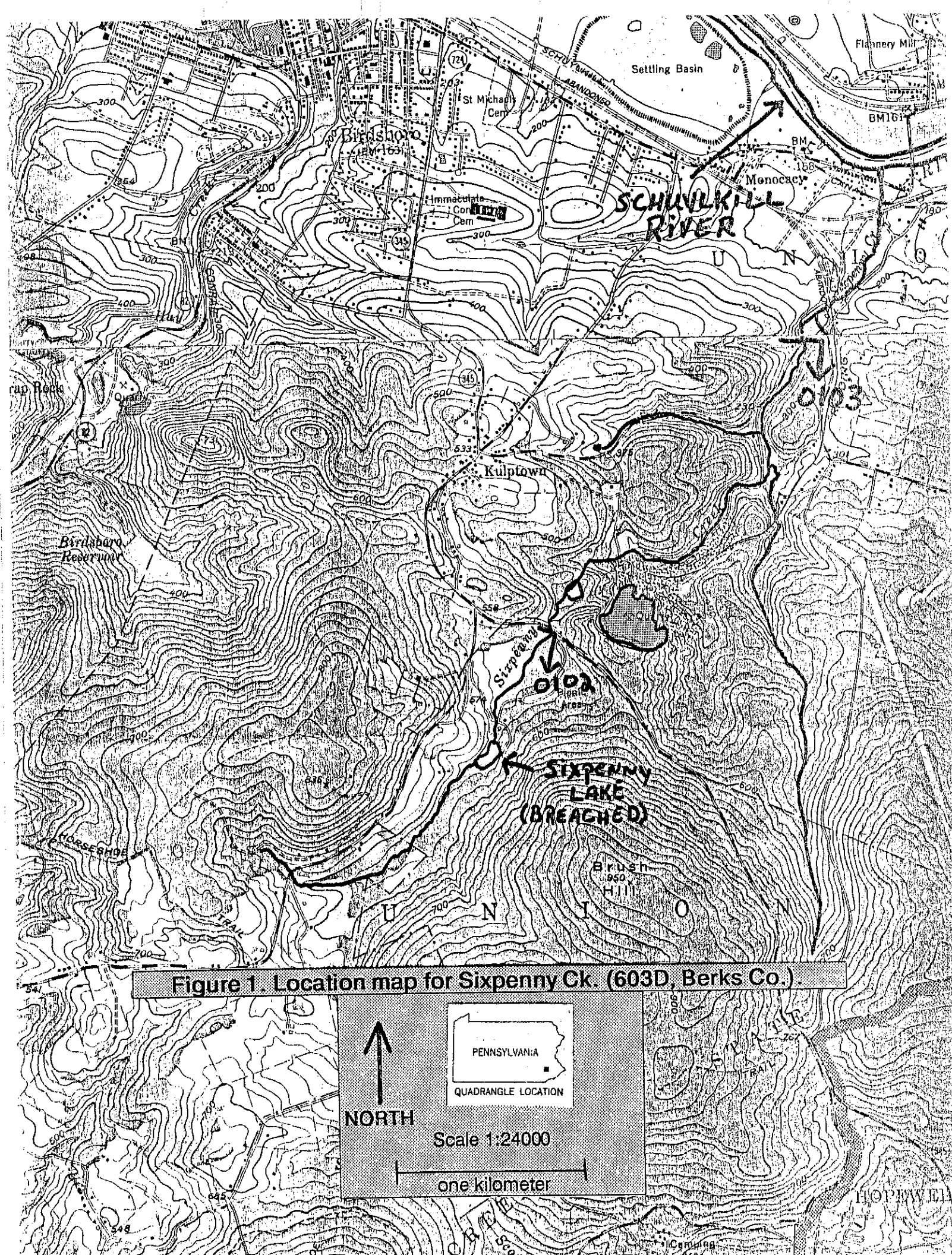

Figure 1. Location map for Sixpenny Ck. (603D, Berks Co.).

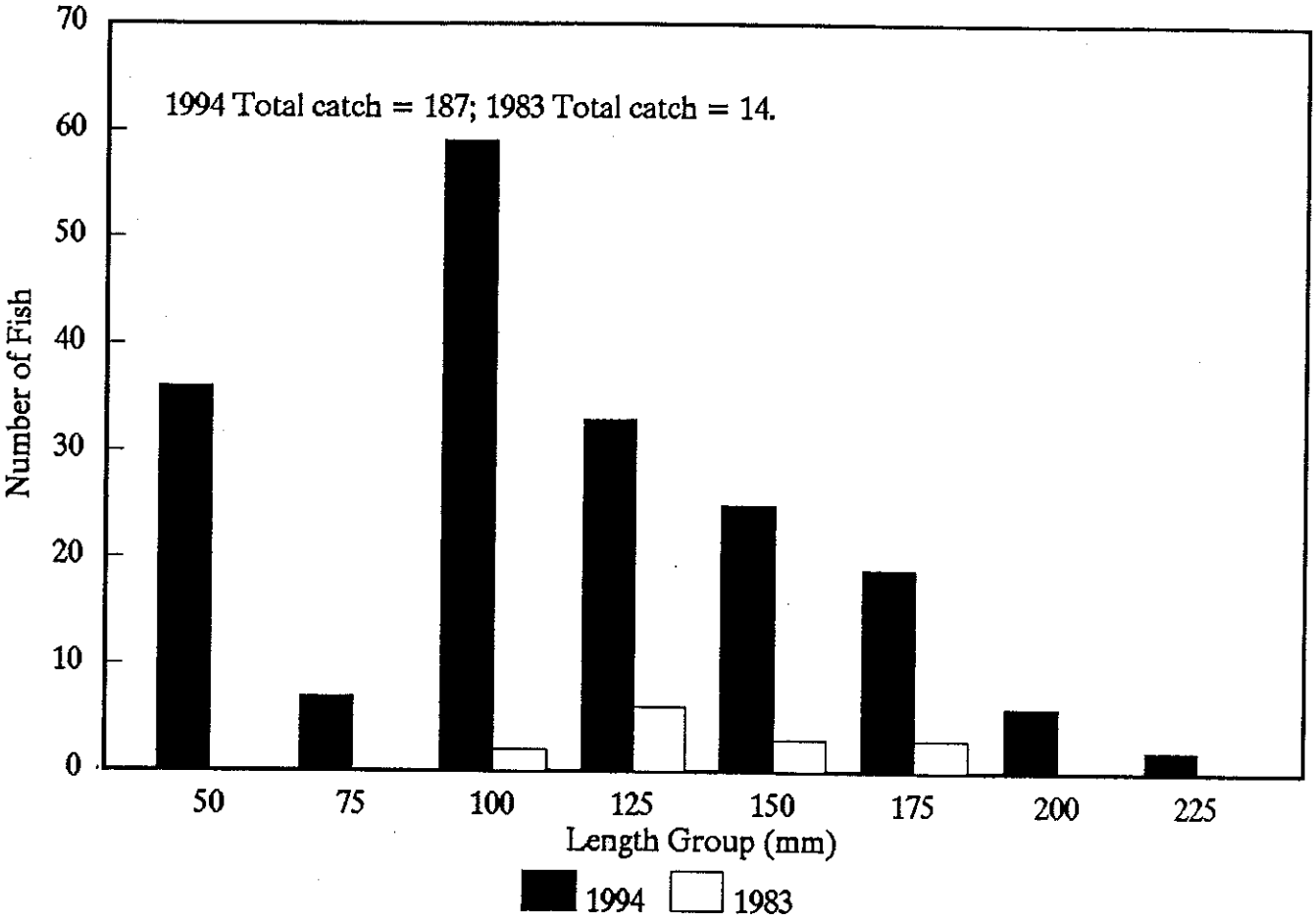

Figure 2. Length-frequency distribution of wild brook trout captured at Site 0102 of Sixpenny Ck. (603D), Berks Co., in July 1994 and April 1983.

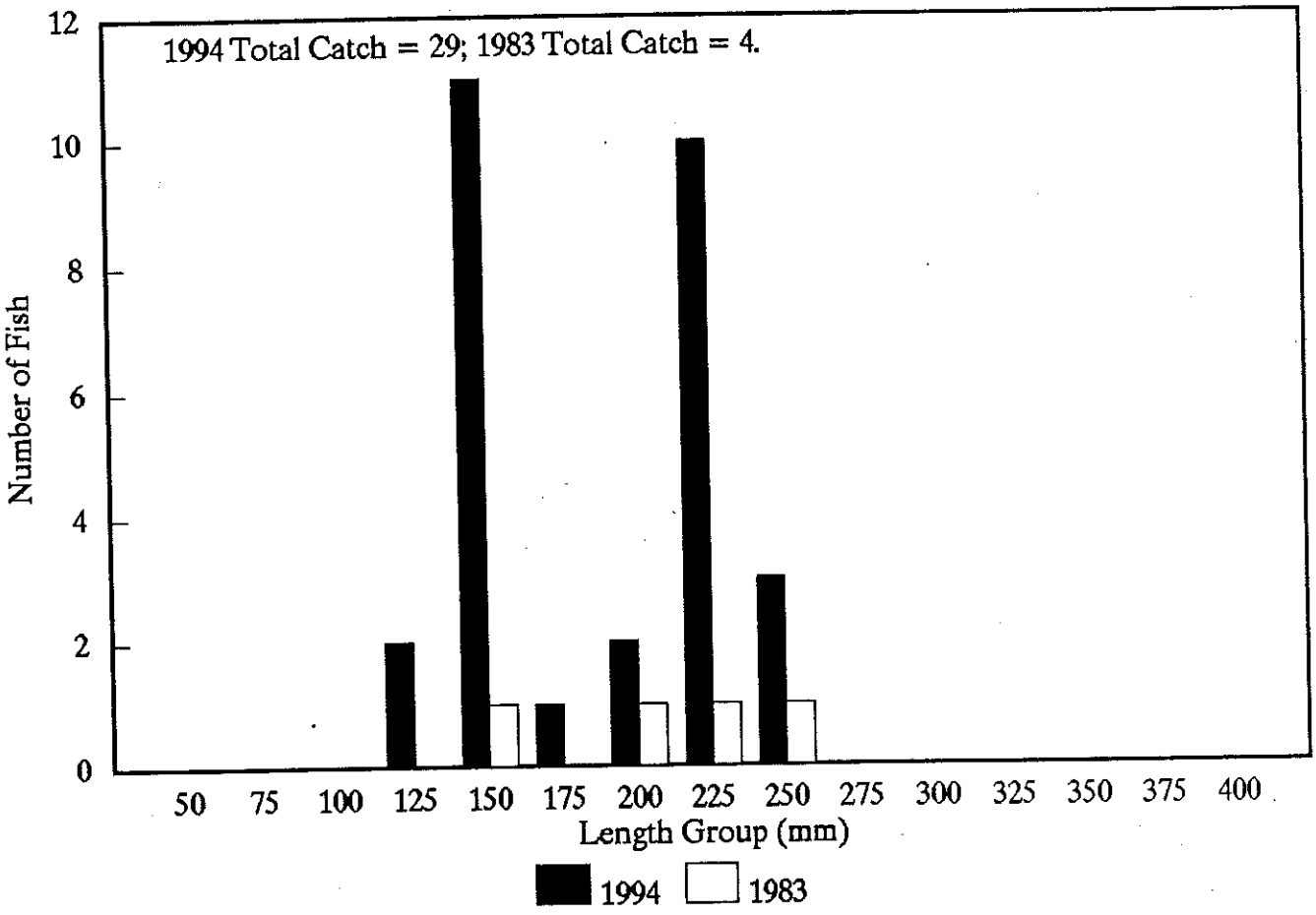

Figure 3. Length-frequency distribution of wild brook trout captured at Site 0103 of Sixpenny Ck. (603D), Berks Co., in Jul 1994 and April 1983.

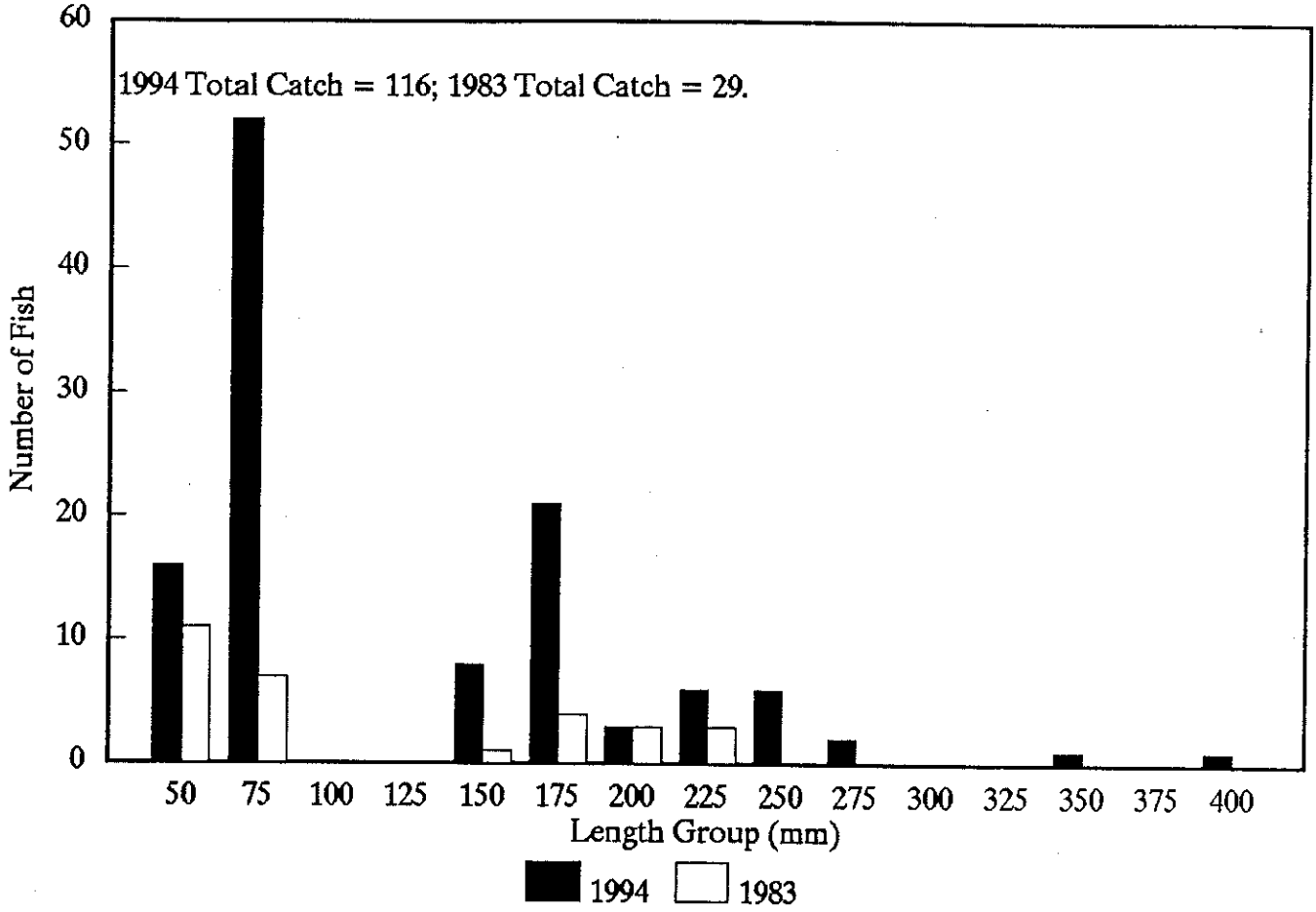

Figure 4. Length-frequency distribution of wild brown trout captured at Site 0103 of Sixpenny Ck. (603D), Berks Co., in Jul 1994 and April 1983.