2003 Annual Report

Fish Salvage at the Tracy Fish Collection Facility

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May, 2004

Introduction

The Tracy Fish Collection Facility (TFCF), diverts (salvages) fish from exported water. The TFCF, which began operation in 1957, uses a louver-bypass system to collect entrained fish, which are then transported to release sites in the Delta. The number of transported fish (salvage) is estimated from sub-samples of fish collected every two hours while water is being pumped.

Exports

Central Valley Project (CVP) water exports totaled about 3.42 billion m^3 (2,776,000 AF), compared to about 3.08 billion m^3 (2,501,000 AF) in 2002. Monthly water exports at the CVP in 2003 ranged from a low of about 110.8 million m^3 (90,000 AF) in May to about 329.4 million m^3 (about 267,000 AF) in March (Figure 1), compared to the 2002 range of about 65.2 million m^3 (53,000 AF) to about 329.0 million m^3 (about 267,000 AF).

Fish Salvage

Almost 7.49 million fish were salvaged at the Tracy Fish Collection Facility in 2003. Threadfin shad was the predominant species salvaged; they accounted for 84% of the annual salvage at the TFCF (Figure 2). There has been a general increase in the annual proportion of threadfin shad in the total salvage, particularly since 1995 (Figure 3).

Density of fish (individuals salvaged per 10,000 m^3) was highest in November (Figure 4). Threadfin shad made up 91% of the salvage during November.

Delta Smelt

In 2003, 16,662 delta smelt were salvaged at the TFCF, only slightly fewer than the 18,396 salvaged in 2002 (Figure 5). Although only 23% of the delta smelt salvage was adults, the 2,136 adults salvaged in January (Figure 6) was the most in that month since 1982. This is the second consecutive year that peak adult salvage has occurred in January. Previous to 2002, there had been a 3 year period of high delta smelt salvage in February.

Chinook Salmon

The TFCF salvaged 15,977 chinook salmon in 2003, nearly the same number as in 2002, but much lower than the 1993-2002 annual average (61,462), and far lower than the 1983-1992 annual average (157,289) (Figure 7). Twenty three percent of the salmon salvaged last year were adipose fin clipped, indicating hatchery origin. Of the naturally-produced salmon, over half (59%) were spring-run, as determined by fork length only, 35% were fall-run, and the remainder (6%) were winter-run.

The TFCF salvaged about 1,360 fewer chinook salmon than the Skinner Delta Fish Protective Facility (SDFPF) during 2003. Over half (56%) of the annual salmon salvage at the TFCF came during April and May (Figure 8).

TFCF salmon loss, an estimate of the mortality resulting from entrainment at the

export facilities, which is based on estimates of pre-screen loss (predation), louver efficiency, and handling and trucking mortality, was 10,716 in 2003, similar to the previous year's total.

Steelhead Trout

The CVP salvaged 6,871 steelhead trout in 2003, the most in any year since 1993 and far above the 1993-2002 mean of 2,449 per year (Figure 9). Steelhead salvage was highest during January. About 78% of TFCF salvaged steelhead were adipose fin-clipped, indicating hatchery origin. This proportion of hatchery steelhead was the highest of any year since 1997, when fin-clipping of all hatchery fish began.

Striped Bass

In 2003, about 165,000 striped bass were salvaged at TFCF, only a small percentage of the ten-year average of 1.09 million per year (Figure 10). Striped bass salvage peaked in June.

American Shad

About 486,000 American shad were salvaged in 2003 at the TFCF, only slightly lower than the 1993-2002 average (Figure 11). Since 1981, there is a general trend of higher American shad salvage (Figure 11). Monthly salvage of American shad at the TFCF peaked at just over 200,000 in November, accounting for about 42% of the annual total.

Splittail

Splittail salvage at TFCF totaled 13,666, which was more than the previous 2 years combined (Figure 12). Splittail salvage totals in 1986, 1995, and 1998 dwarf the salvage totals for 2003 and all other years since 1980. Splittail salvage in 2003 was dominated by young-of-the-year (YOY) salvage during June (Figure 13).

Longfin Smelt

In 2003, 4,562 longfin were salvaged at the TFCF, almost 3,800 more than at the SDFPF. Virtually all of the salvage occurred in April and May and was made up of YOY fish.

Chinese Mitten Crab

At the TFCF, the first adult mitten crab of the fall migration appeared on October 4, about 1 month later than usual. The delay in migration may have been due to higher than normal autumn water temperatures. TFCF daily crab numbers peaked on November 2, when an estimated 72 crabs entered the facility (Figure 14). In 2003, an estimated 672 crabs entered the holding tanks. The 2003 seasonal total of crabs was much lower than any of the last 6 years. In contrast to other years since 1999, the traveling screen control device was not deployed due to low numbers of crabs. About 60% of the crabs were male.

Water Temperatures

The mean annual water temperature in 2003 at the TFCF was 17 °C, equal to the mean temperature in 2002. Water temperatures peaked approximately July 27, at about 27.3 °C. The coolest temperatures occurred near January 1, when they fell to about 8 °C (Figure 15). The most notable feature of the 2003 temperatures was the warm autumn; temperatures in late October, for example, were up to 4 °C warmer than the same time the previous year.

Salvage data can be obtained from DFG's Central Valley Bay Delta Branch Web Site (http://www.delta.dfg.ca.gov/data/salvage).

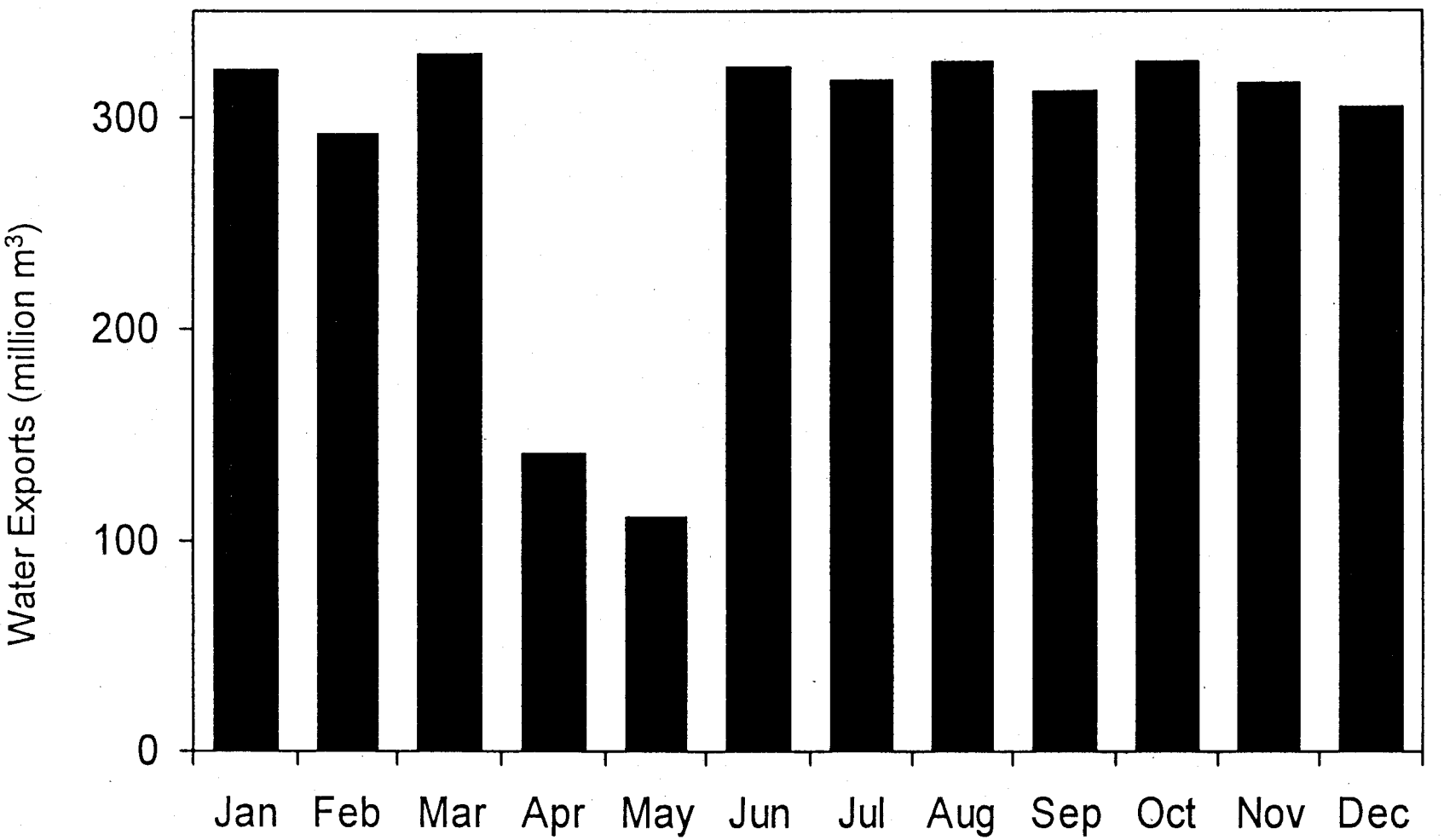

Figure 1. CVP monthly water exports in 2003.

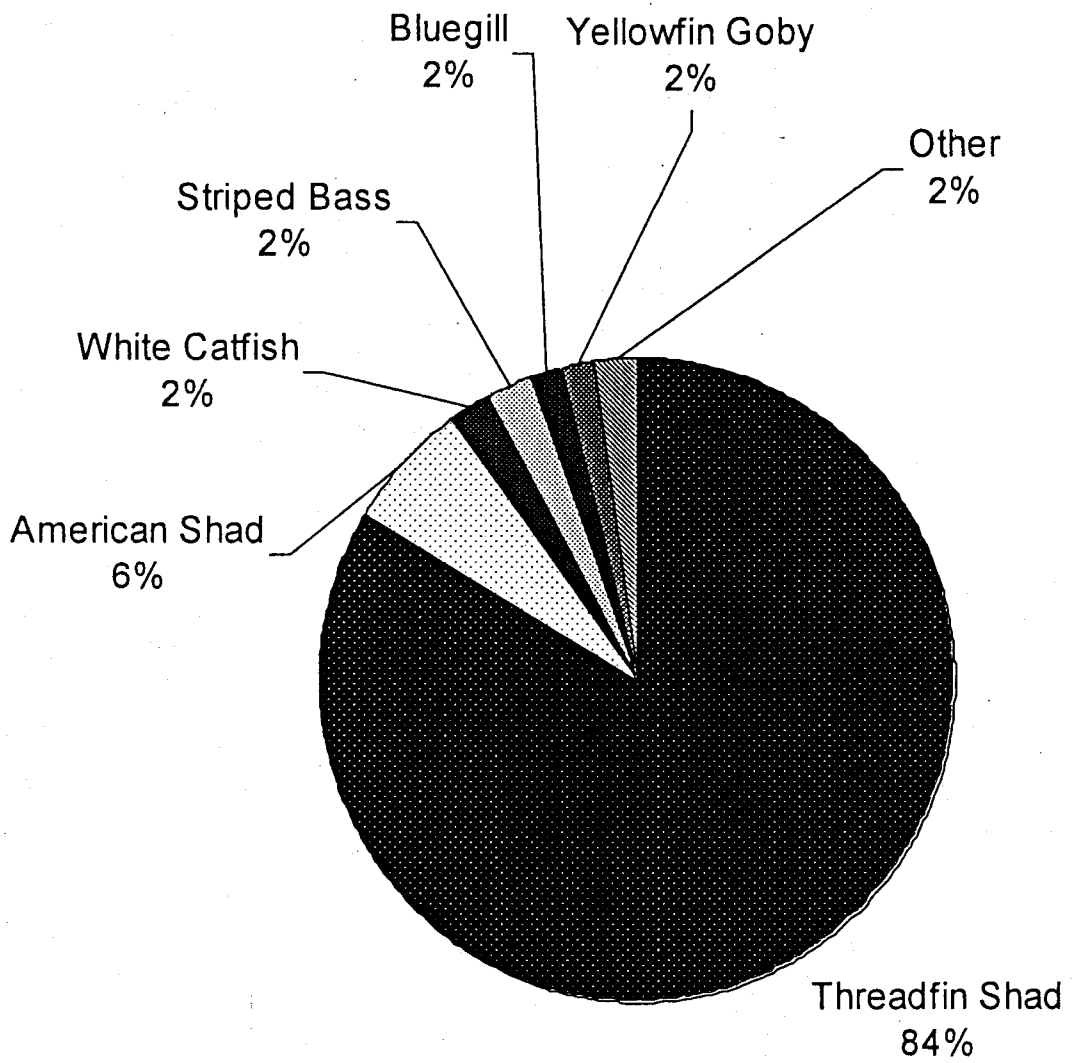

Figure 2. Relative species contribution to 2003 annual salvage at TFCF.

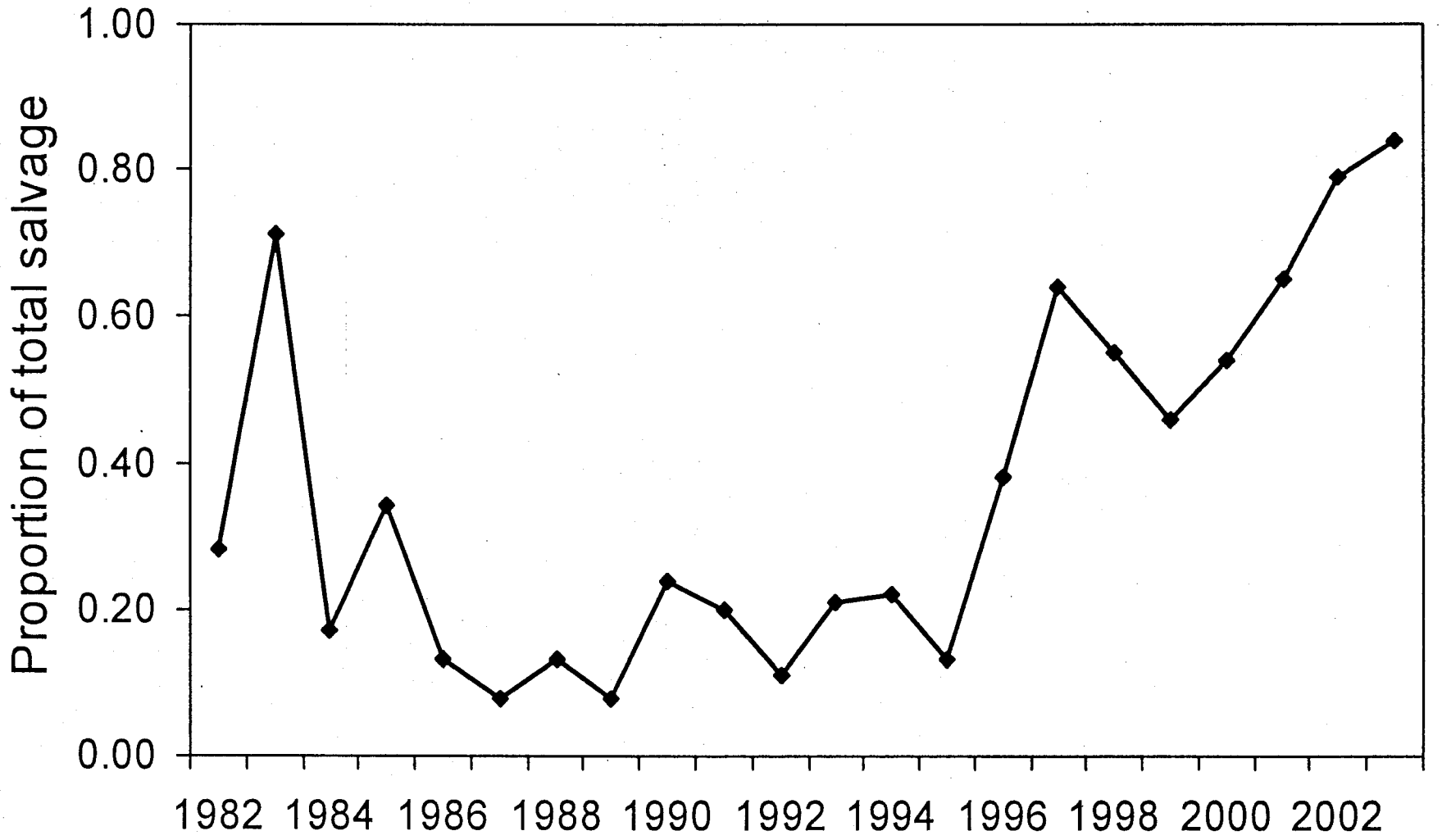

Figure 3. Proportion of threadfin shad in total salvage at TFCF.

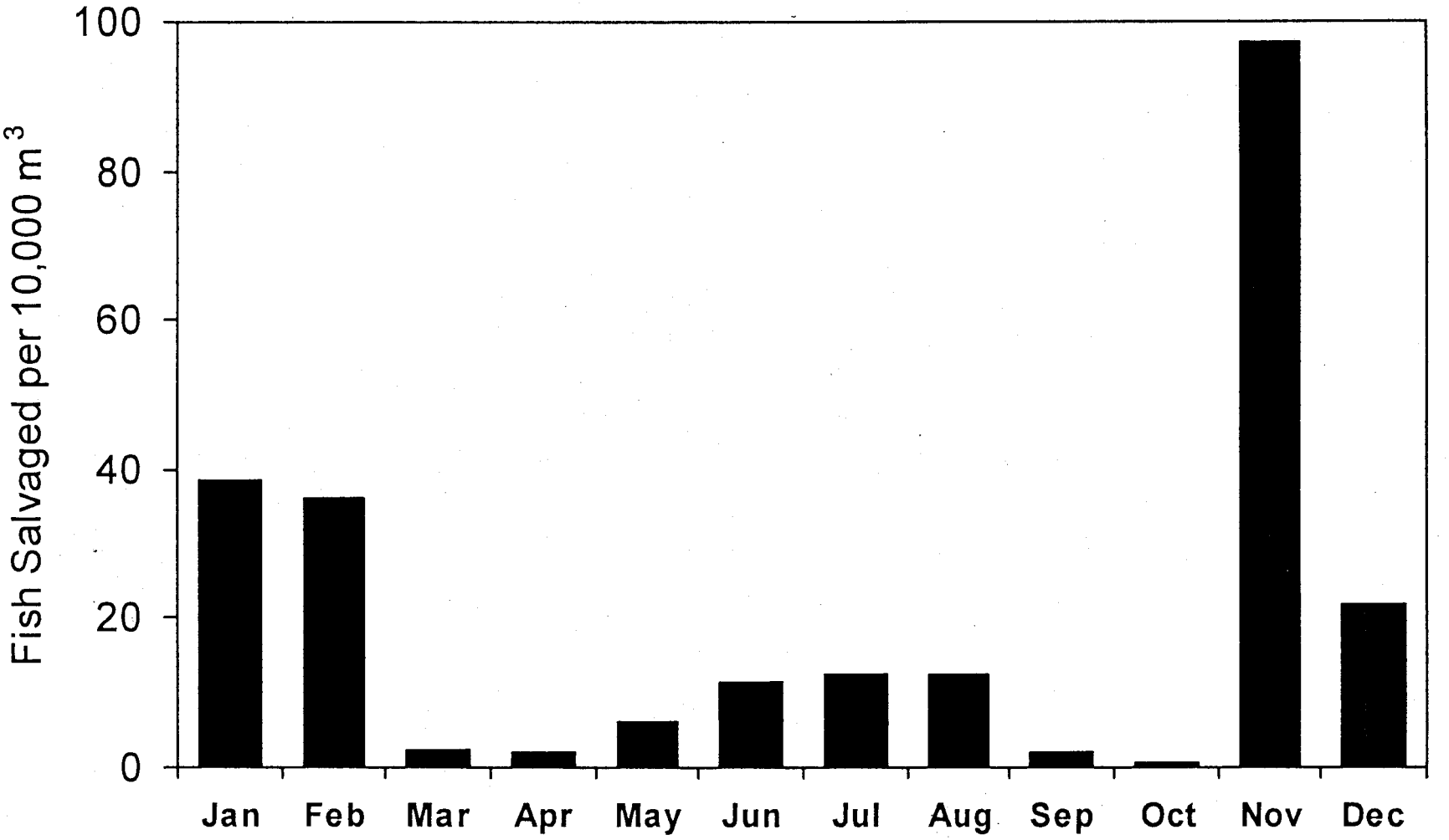

Figure 4. Fish salvage density in 2003 TFCF.

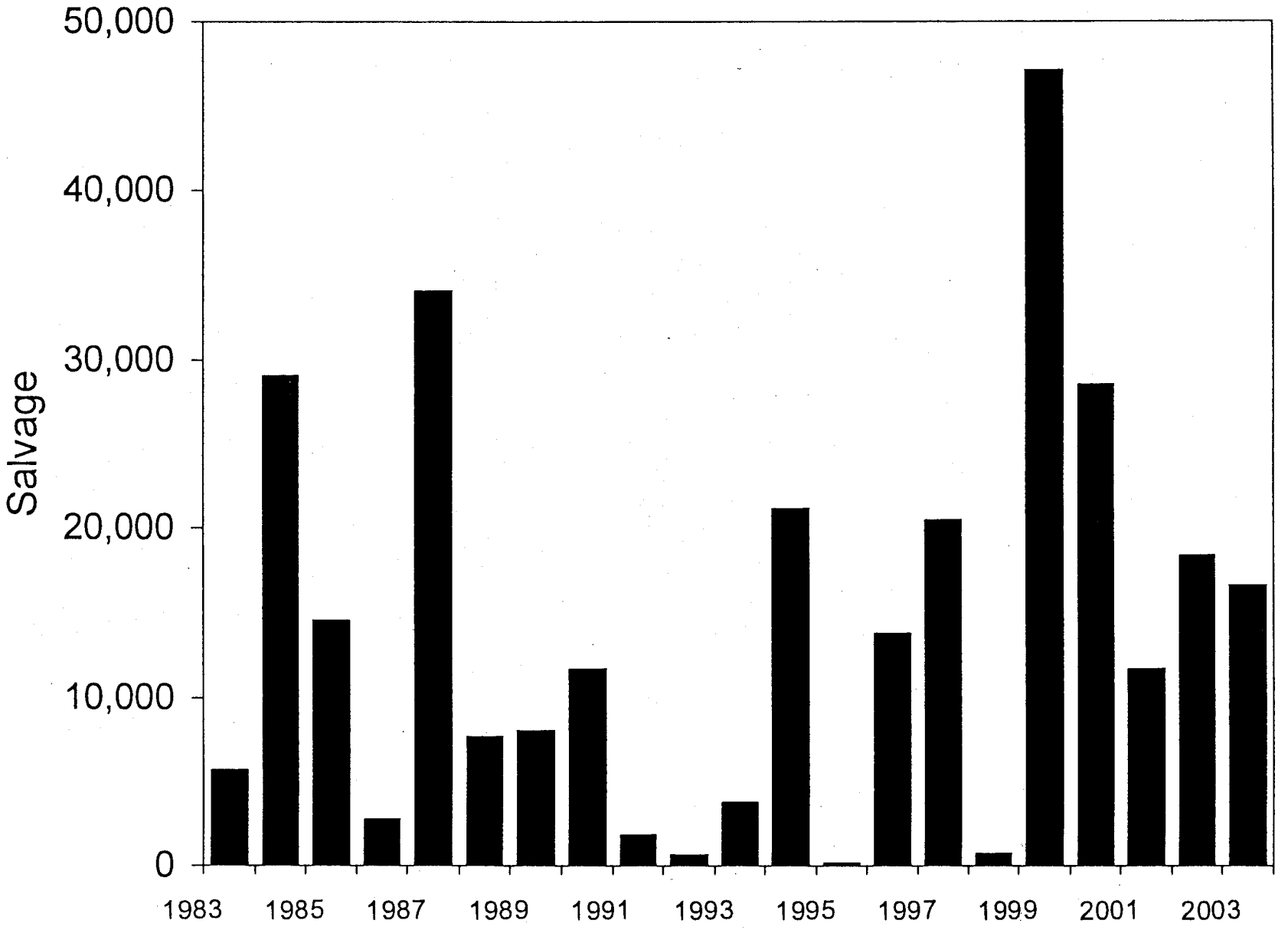

Figure 5. Annual delta smelt salvage at TFCF.

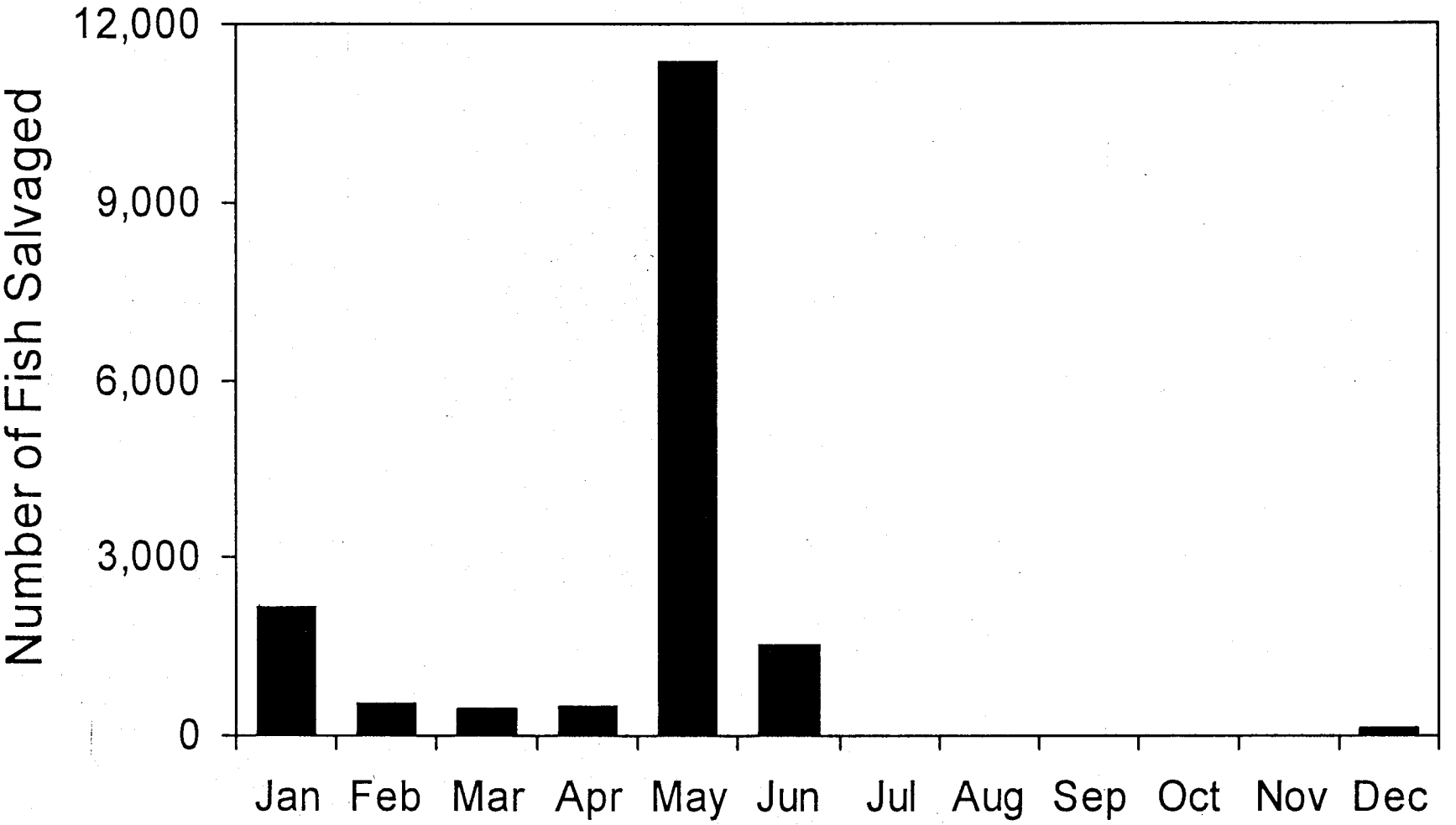

Figure 6. Monthly delta smelt salvage at TFCF in 2003.

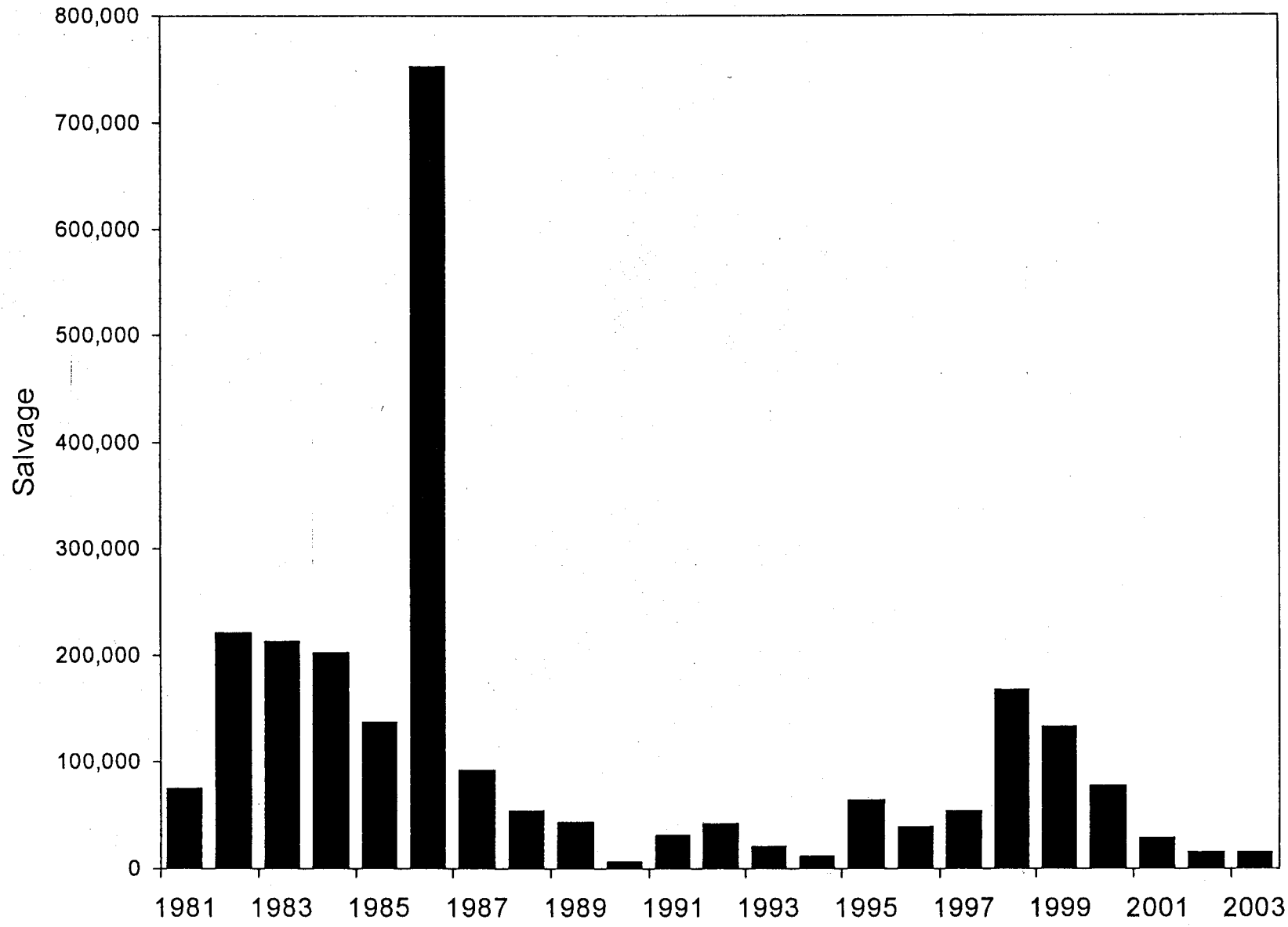

Figure 7. Annual chinook salmon salvage at TFCF.

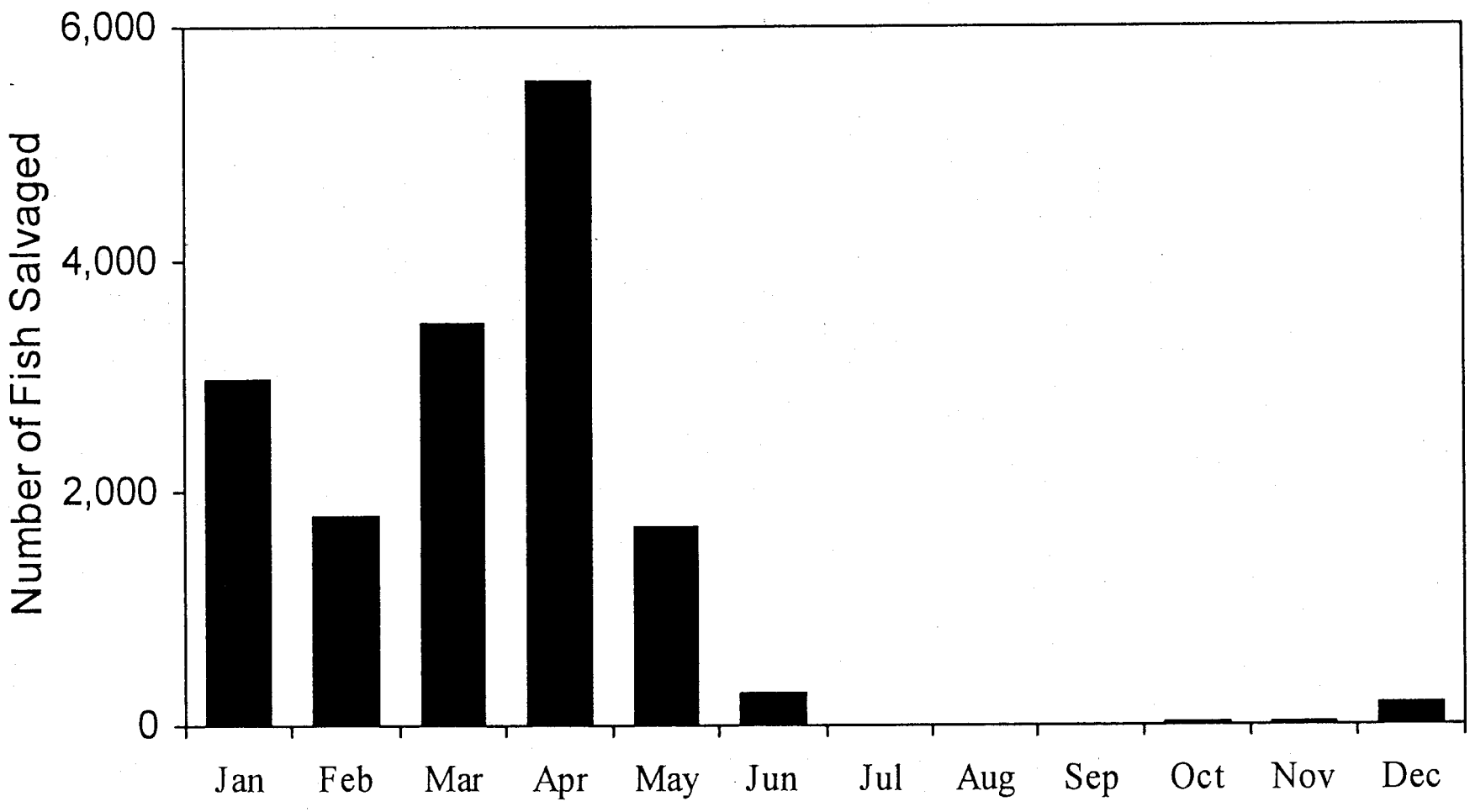

Figure 8. Monthly salvage of chinook salmon at TFCF in 2003.

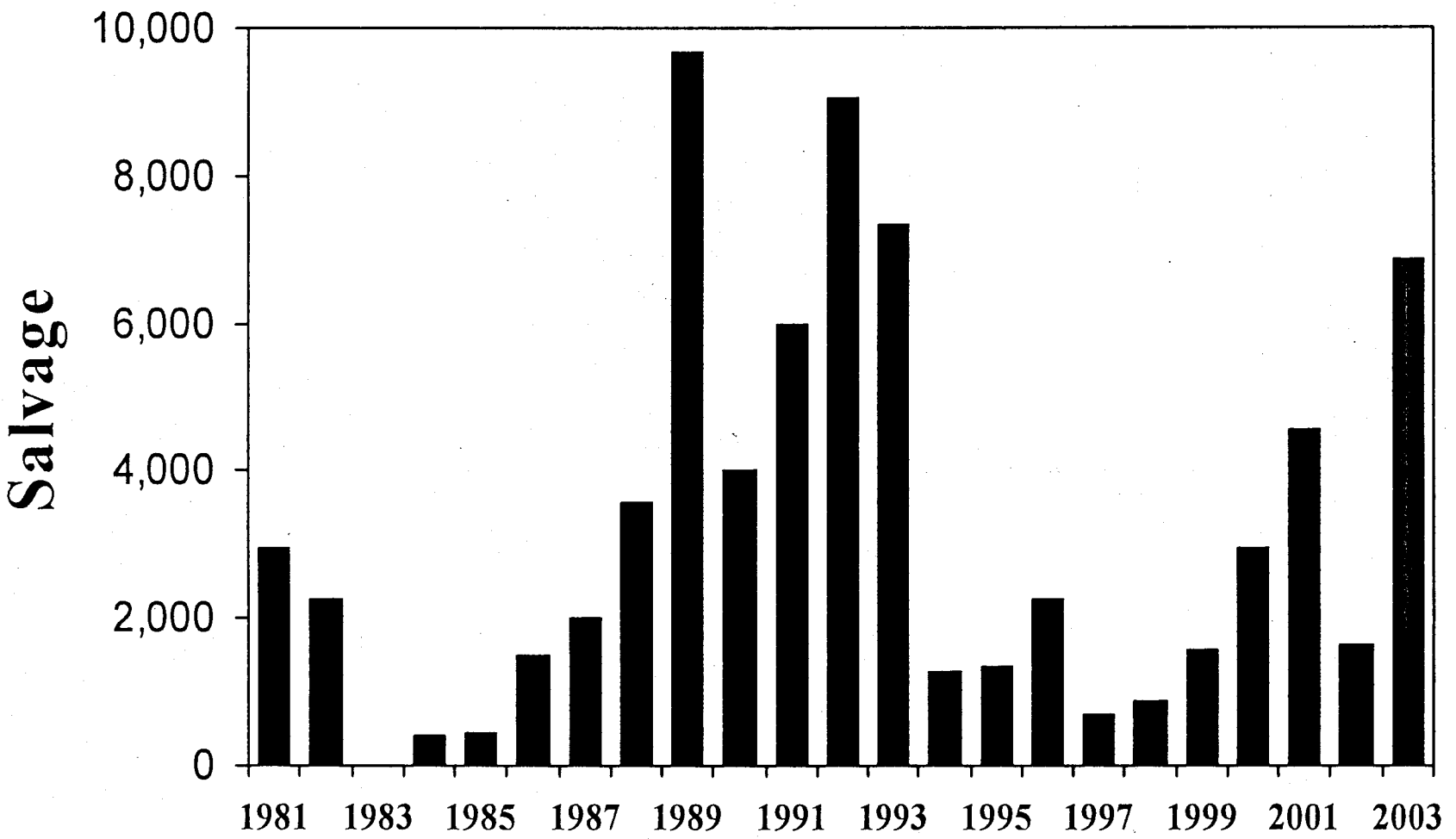

Figure 9. Annual TFCF Steelhead Salvage

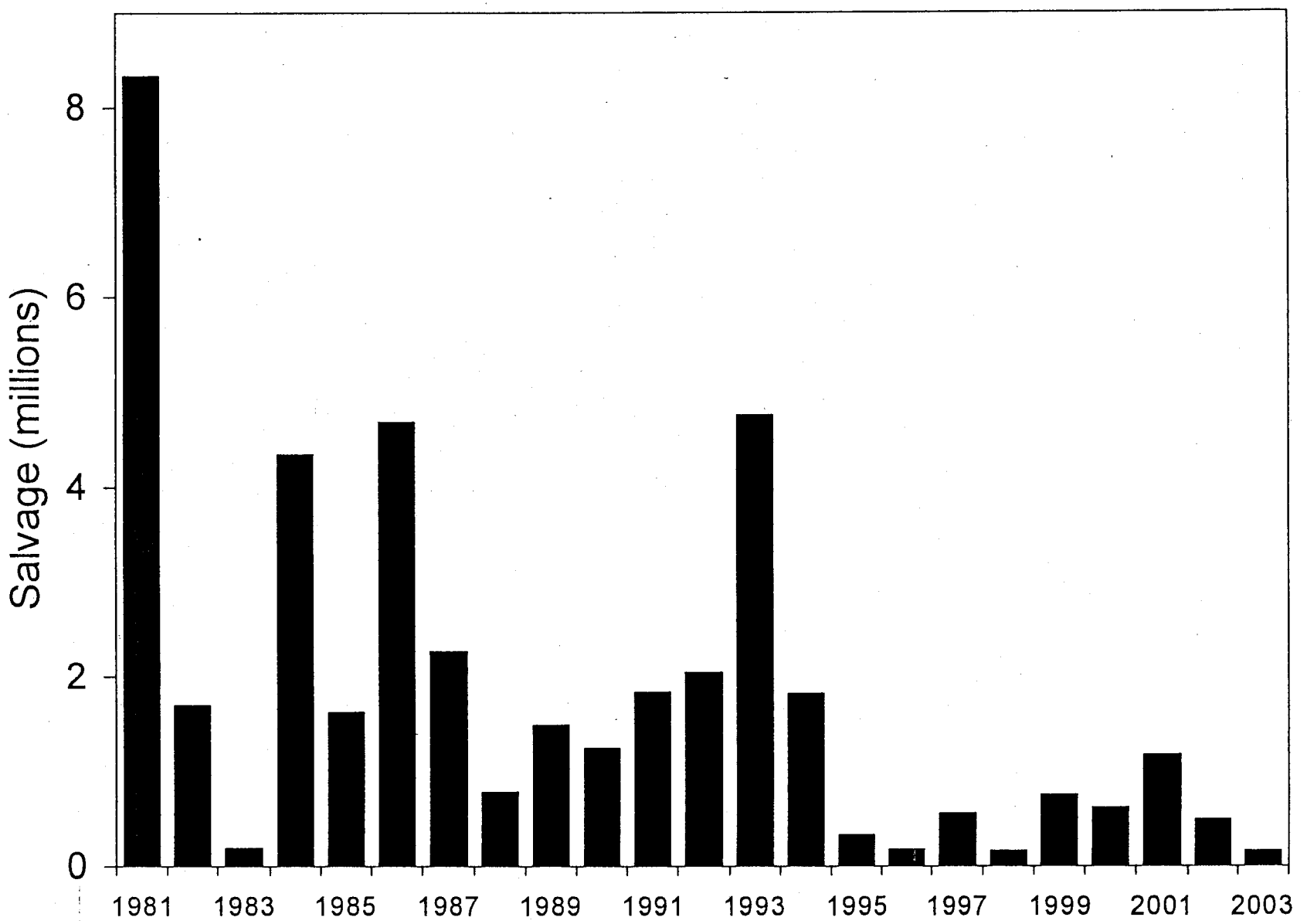

Figure 10. Annual striped bass salvage at TFCF.

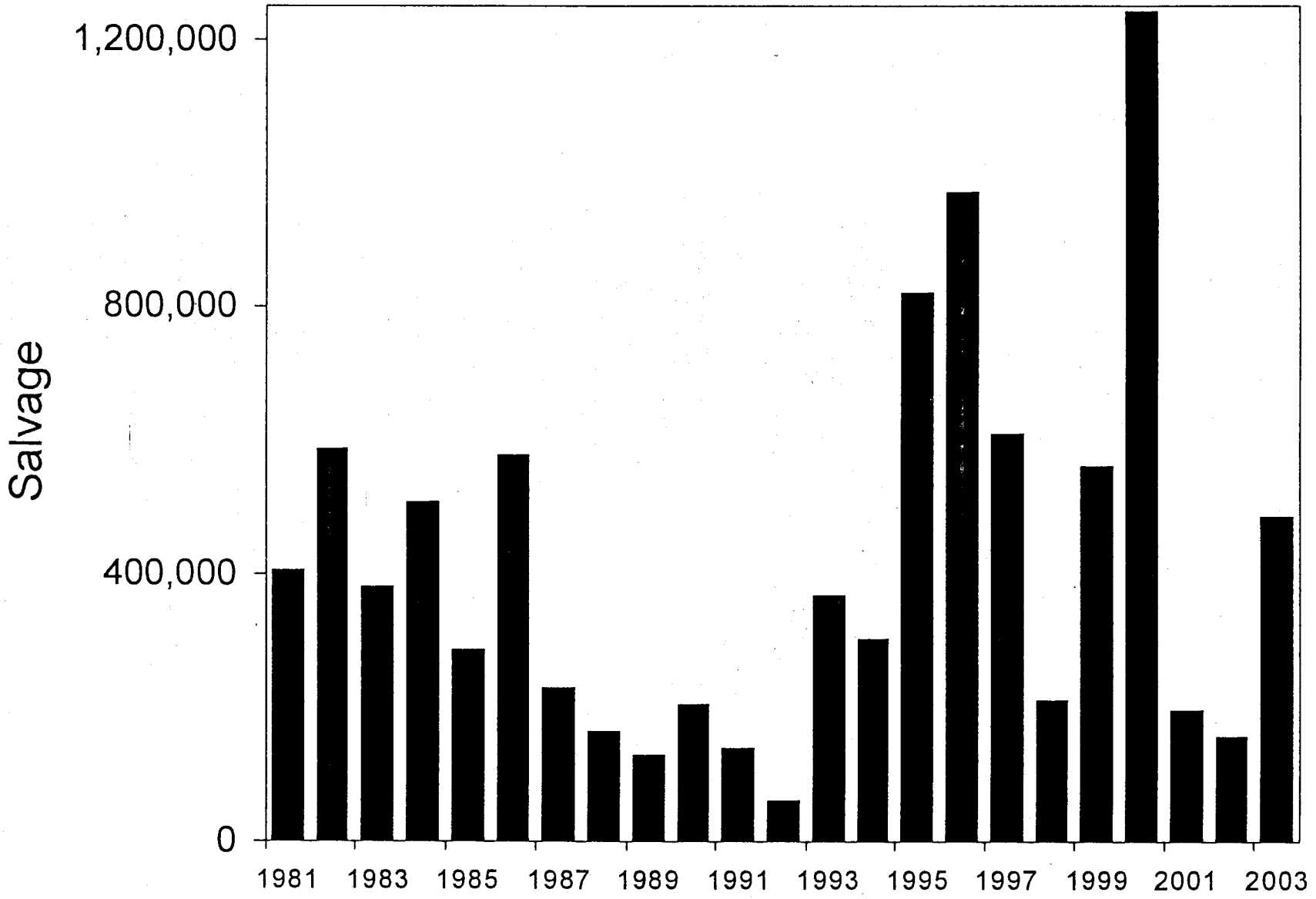

Figure 11. Annual American shad salvage at TFCF.

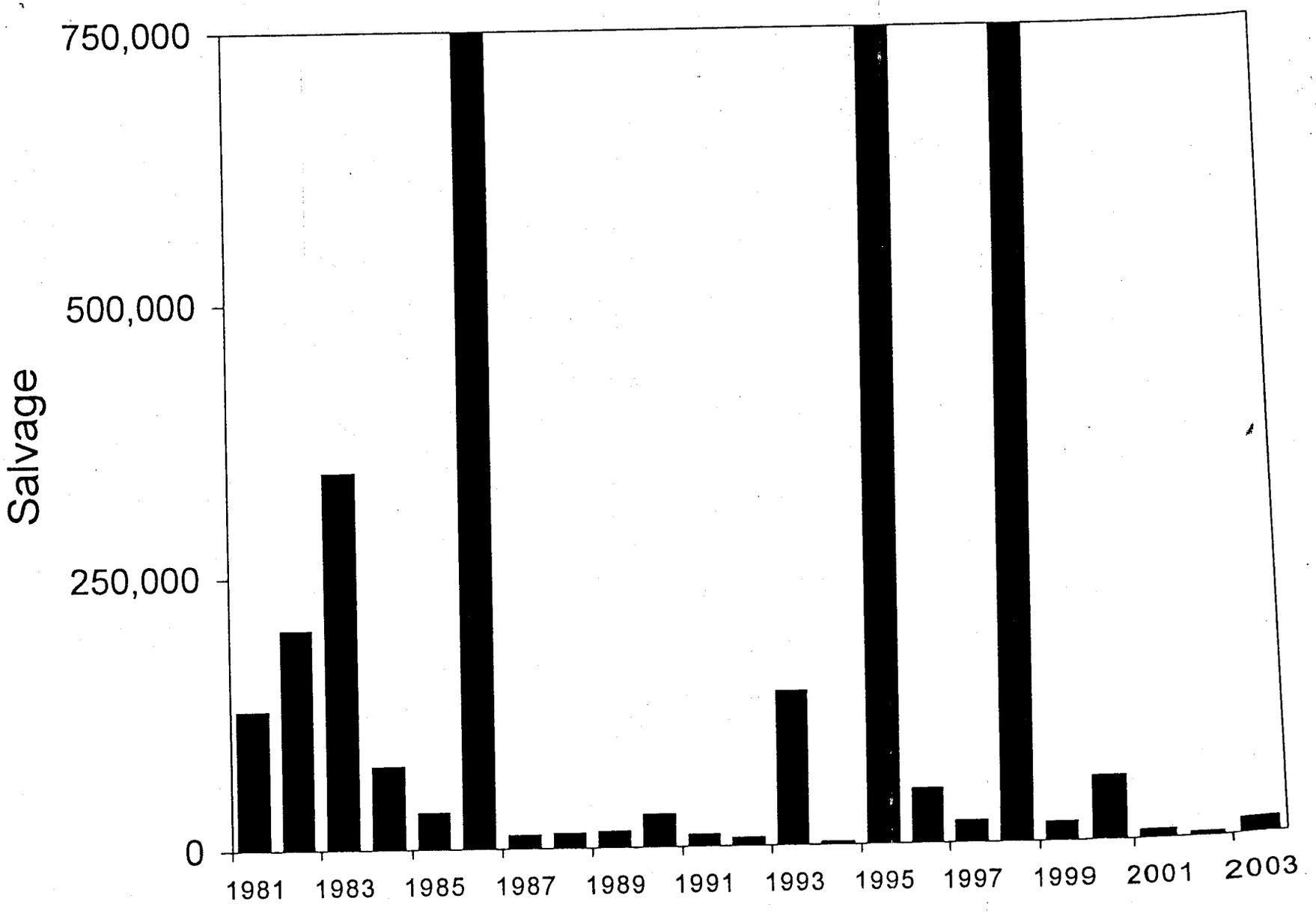

Figure 12. Annual splittail salvage at TFCF. Columns for 1986,1995, and 1998 were truncated for scale considerations.

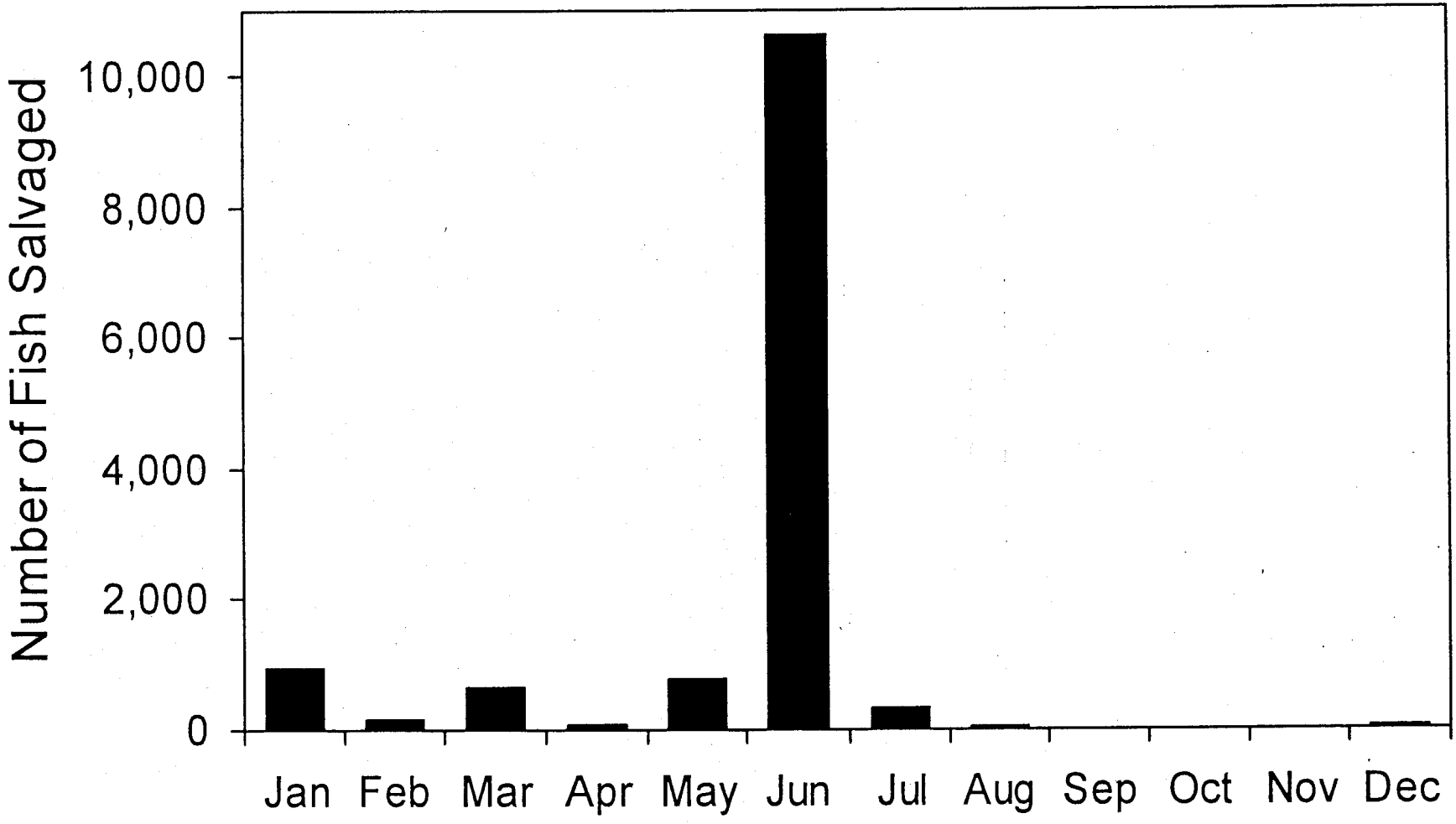

Figure 13. Monthly splittail salvage at TFCF in 2003.

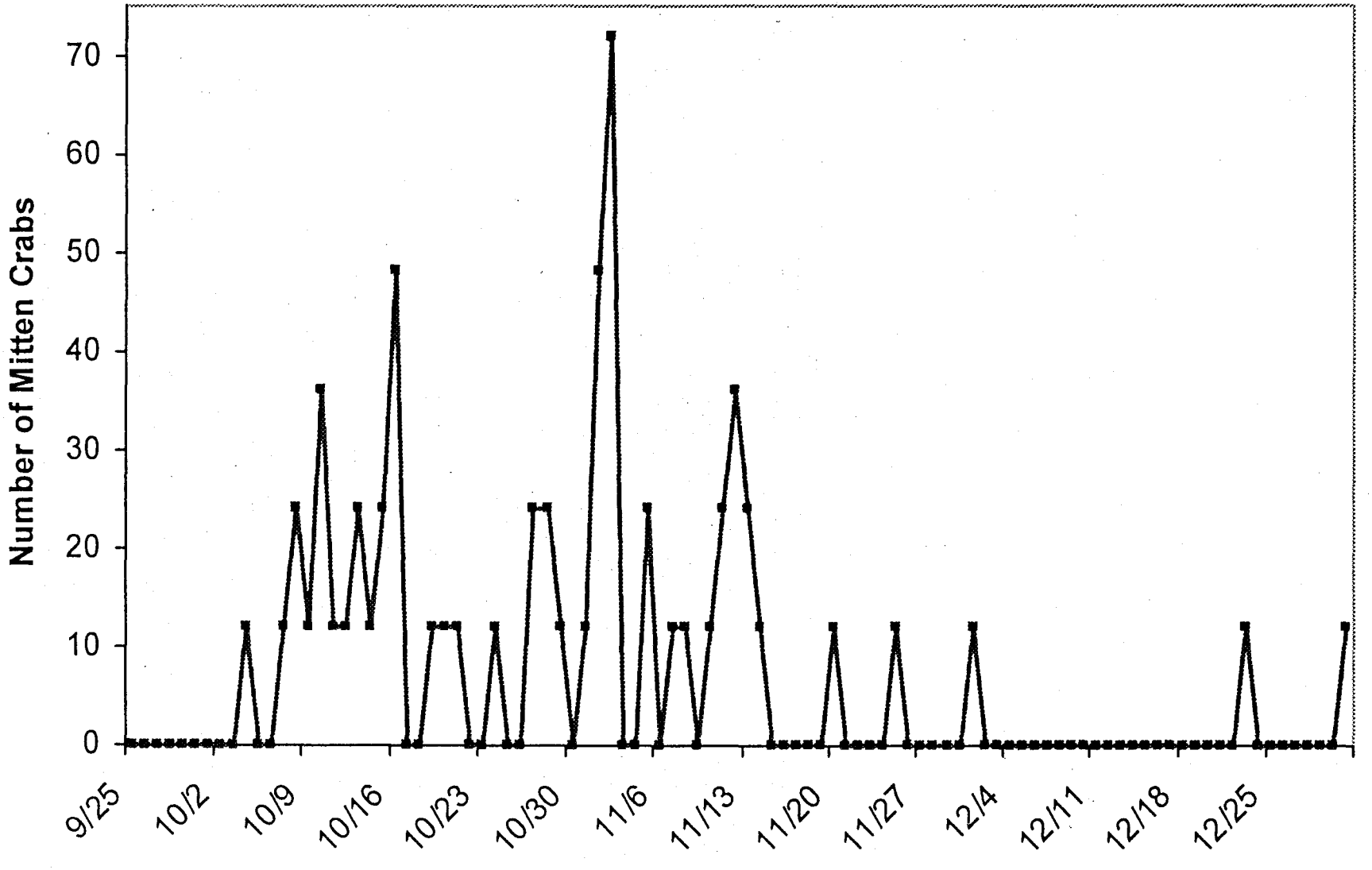

Figure 14. Daily expanded counts of mitten crabs at TFCF in 2003.

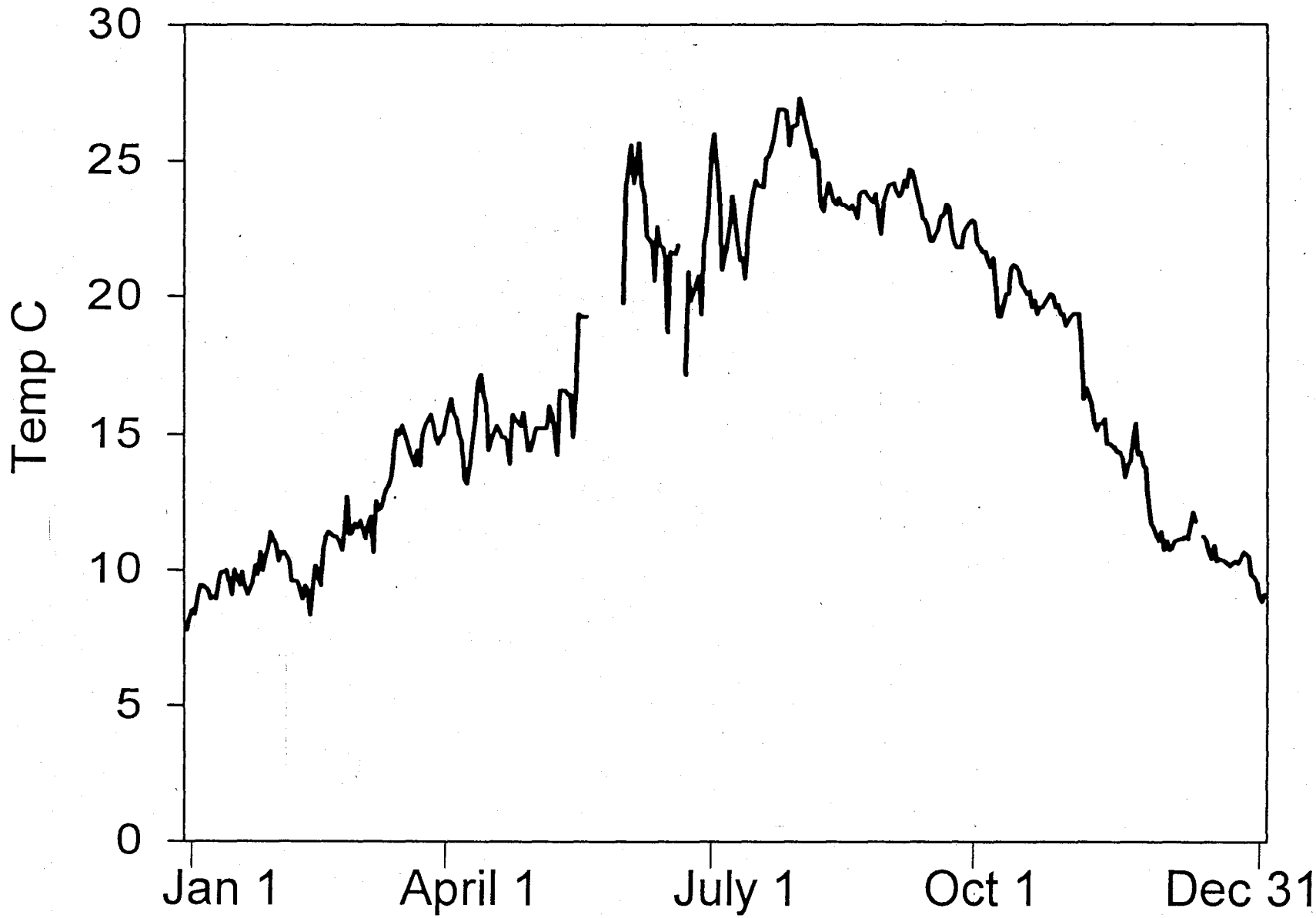

Figure 15. Daily water temperatures at TFCF in 2003.