

Eaton Vance Senior Floating-Rate Trust

Up to 3,085,835 Common Shares

Eaton Vance Senior Floating-Rate Trust (the “Trust,” “we,” or “our”) is a diversified, closed-end management investment company, which commenced operations on November 24, 2003. Our investment objective is to provide a high level of current income. We may, as a secondary objective, also seek preservation of capital to the extent consistent with our primary goal of high current income. The Trust may offer and sell up to 3,085,835 of common shares of beneficial interest, \$0.01 par value (“Common Shares”). This amount represents Common Shares previously registered on Form N-2 (Reg. No. 333-229695) that are unsold and are being carried forward as permitted by Rule 415(a)(6) and Rule 457(p) under the Securities Act of 1933, as amended (the “1933 Act”).

The Trust has entered into a distribution agreement dated March 31, 2023 (the “Distribution Agreement”) with Eaton Vance Distributors, Inc. (the “Distributor”) relating to the Common Shares offered by this Prospectus Supplement and the accompanying Prospectus dated March 31, 2023. The Distributor has entered into a dealer agreement, dated March 31, 2023, (the “Dealer Agreement”) with UBS Securities LLC (the “Dealer”) with respect to the Trust relating to the Common Shares offered by this Prospectus Supplement and the accompanying Prospectus. In accordance with the terms of the Dealer Agreement, we may offer and sell our Common Shares, \$0.01 par value per share, from time to time through the Dealer as sub-placement agent for the offer and sale of the Common Shares. Under the Investment Company Act of 1940, as amended (the “1940 Act”), the Trust may not sell any Common Shares at a price below the current net asset value of such Common Shares, exclusive of any distributing commission or discount.

Prior to March 1, 2021, the Distributor was a direct, wholly owned subsidiary of Eaton Vance Corp. (“EVC”). On March 1, 2021, Morgan Stanley acquired EVC (the “Transaction”) and the Distributor became an indirect, wholly owned subsidiary of Morgan Stanley.

Our Common Shares are listed on the New York Stock Exchange (“NYSE”) under the symbol “EFR.” As of March 21, 2023, the last reported sales price for our Common Shares on the NYSE was \$11.19 per share.

Sales of our Common Shares, if any, under this Prospectus Supplement and the accompanying Prospectus may be made in negotiated transactions or transactions that are deemed to be “at the market” as defined in Rule 415 under the 1933 Act, including sales made directly on the NYSE or sales made to or through a market maker other than on an exchange.

The Trust will compensate the Distributor with respect to sales of the Common Shares at a commission rate of 1.00% of the gross proceeds of the sale of Common Shares. The Distributor will compensate the Dealer out of this commission at a certain percentage rate of the gross proceeds of the sale of Common Shares sold under the Dealer Agreement, with the exact amount of such compensation to be mutually agreed upon by the Distributor and the Dealer from time to time. In connection with the sale of the Common Shares on the Trust’s behalf, the Distributor may be deemed to be an “underwriter” within the meaning of the 1933 Act and the compensation of the Dealer may be deemed to be underwriting commissions or discounts.

The Common Shares have traded both at a premium and a discount to net asset value (“NAV”). The Trust cannot predict whether Common Shares will trade in the future at a premium or discount to NAV. The provisions of the 1940 Act, generally require that the public offering price of common shares (less any underwriting commissions and discounts) must equal or exceed the NAV per share of a company’s common stock. The Trust’s issuance of Common Shares may have an adverse effect on prices in the secondary market for the Trust’s Common Shares by increasing the number of Common Shares available, which may put downward pressure on the market price for the Trust’s Common Shares. Shares of common stock of closed-end investment companies frequently trade at a discount from NAV, which may increase investors’ risk of loss.

Investing in our securities involves certain risks, including that no active trading market may exist for certain loans, which may impair the ability of the Trust to realize full value in the event of the need to sell a loan and which may make it difficult to value the loan. To the extent that a secondary market does exist for certain loans, the market may be subject to irregular trading activity, wide bid/ask spreads, extended trade settlement periods and contractual restrictions that must be satisfied before a loan may be bought or sold. In addition, loans with fewer covenants that restrict activities of the borrower (“covenant lite” loans) may provide the borrower with more flexibility to take actions that may be detrimental to the loan holders and provide fewer investor protections in the event of such actions or if covenants are breached. The Trust will, also, invest substantial portions of its assets in below investment grade quality securities with predominantly speculative characteristics, commonly known as “junk”. You could lose some or all of your investment. See “Investment Objectives, Policies and Risks” beginning on page 23 of the accompanying Prospectus. You should consider carefully these risks together with all of the other information contained in this Prospectus Supplement and the accompanying Prospectus before making a decision to purchase our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this Prospectus Supplement or the accompanying Prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

This Prospectus Supplement, together with the accompanying Prospectus, sets forth concisely information about the Trust that you should know before investing. You should read this Prospectus Supplement and the accompanying Prospectus, which contain important information, before deciding whether to invest in our securities. You should retain the accompanying Prospectus and this Prospectus Supplement for future reference. A Statement of Additional Information (“SAI”), dated March 31, 2023 as supplemented from time to time, containing additional information about the Trust, has been filed with the Securities and Exchange Commission (the “SEC”) and is incorporated by reference in its entirety into this Prospectus Supplement and the accompanying Prospectus. This Prospectus Supplement, the accompanying Prospectus and the SAI are part of a “shelf” registration statement that we filed with the SEC. This Prospectus Supplement describes the specific details regarding this offering (as defined below), including the method of distribution. If information in this Prospectus Supplement is inconsistent with the accompanying Prospectus or the SAI, you should rely on this Prospectus Supplement. You may request a free copy of the SAI, the table of contents of which is on page 60 of the accompanying Prospectus, a free copy of our annual and semi-annual reports to shareholders, obtain other information or make shareholder inquiries, by calling toll-free 1-800-262-1122 or by writing to the Trust at Two International Place, Boston, Massachusetts 02110. The Trust’s SAI and annual and semi-annual reports also are available free of charge on our website at <http://www.eatonvance.com> and on the SEC’s website (<http://www.sec.gov>). You may also obtain these documents, after paying a duplication fee, by electronic request at the following email address: publicinfo@sec.gov.

Our securities do not represent a deposit or obligation of, and are not guaranteed or endorsed by, any bank or other insured depository institution and are not federally insured by the Federal Deposit Insurance Corporation, the Federal Reserve Board or any other government agency.

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You should rely only on the information contained in, or incorporated by reference into, this Prospectus Supplement and the accompanying Prospectus in making your investment decisions. The Trust has not authorized any person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. The Trust is not making an offer to sell the securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information in this Prospectus Supplement and the accompanying Prospectus is accurate only as of the dates on their covers. The Trust's business, financial condition and prospects may have changed since the date of its description in this Prospectus Supplement or the date of its description in the accompanying Prospectus.

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Until April 25, 2023 (25 days after the date of this Prospectus Supplement), all dealers that buy, sell or trade the Common Shares, whether or not participating in this offering (as defined below), may be required to deliver the Prospectus and this Prospectus Supplement. This requirement is in addition to the dealers' obligation to deliver the Prospectus and this Prospectus Supplement when acting as underwriters and with respect to their unsold allotments or subscriptions.

CAUTIONARY NOTICE REGARDING FORWARD-LOOKING STATEMENTS

This Prospectus Supplement, the accompanying Prospectus and the SAI contain “forward-looking statements.” Forward-looking statements can be identified by the words “may,” “will,” “intend,” “expect,” “estimate,” “continue,” “plan,” “anticipate,” and similar terms and the negative of such terms. Such forward-looking statements may be contained in this Prospectus Supplement as well as in the accompanying Prospectus. By their nature, all forward-looking statements involve risks and uncertainties, and actual results could differ materially from those contemplated by the forward-looking statements. Several factors that could materially affect our actual results are the performance of the portfolio of securities we hold, the price at which our shares will trade in the public markets and other factors discussed in our periodic filings with the SEC.

Although we believe that the expectations expressed in our forward-looking statements are reasonable, actual results could differ materially from those projected or assumed in our forward-looking statements. Our future financial condition and results of operations, as well as any forward-looking statements, are subject to change and are subject to inherent risks and uncertainties, such as those disclosed in the “Investment Objectives, Policies and Risks” section of the accompanying Prospectus. All forward-looking statements contained or incorporated by reference in this Prospectus Supplement or the accompanying Prospectus are made as of the date of this Prospectus Supplement or the accompanying Prospectus, as the case may be. Except for our ongoing obligations under the federal securities laws, we do not intend, and we undertake no obligation, to update any forward-looking statement. The forward-looking statements contained in this Prospectus Supplement, the accompanying Prospectus and the SAI are excluded from the safe harbor protection provided by section 27A of the 1933 Act.

Currently known risk factors that could cause actual results to differ materially from our expectations include, but are not limited to, the factors described in the “Investment Objectives, Policies and Risks” section of the accompanying Prospectus. We urge you to review carefully that section for a more detailed discussion of the risks of an investment in our securities.

Prospectus Supplement Summary

The following summary is qualified in its entirety by reference to the more detailed information included elsewhere in this Prospectus Supplement and in the accompanying Prospectus and in the SAI.

THE TRUST

Eaton Vance Senior Floating-Rate Trust (the “Trust,” “we,” or “our”) is a diversified, closed-end management investment company, which commenced operations on November 24, 2003. The Trust offers investors the opportunity to receive a high level of current income, through a professionally managed portfolio investing primarily in senior, secured floating rate loans (“Senior Loans”), which are normally accessible only to financial institutions and large corporate and institutional investors, and are not widely available to individual investors. To the extent consistent with this objective, the Trust may also offer an opportunity for preservation of capital. Investments are based on Eaton Vance Management’s (“Eaton Vance” or the “Adviser”) internal research and ongoing credit analysis, which is generally not available to individual investors. An investment in the Trust may not be appropriate for all investors. There is no assurance that the Trust will achieve its investment objectives.

THE ADVISER

Eaton Vance acts as the Trust’s investment adviser. Eaton Vance’s principal office is located at Two International Place, Boston, MA 02110. Eaton Vance, its affiliates and predecessor companies have been managing assets of individuals and institutions since 1924 and of investment companies since 1931. Prior to March 1, 2021, Eaton Vance was a wholly owned subsidiary of Eaton Vance Corp. (“EVC”).

On March 1, 2021, Morgan Stanley acquired EVC (the “Transaction”) and Eaton Vance became an indirect, wholly owned subsidiary of Morgan Stanley. In connection with the closing of the Transaction, the Trust entered into an interim investment advisory agreement (the “Interim Agreement”) with Eaton Vance, which took effect on March 1, 2021. The Interim Agreement allowed Eaton Vance to continue to manage the Trust for up to an additional 150 days following the Transaction to provide more time for further proxy solicitation in connection with shareholder approval of a new investment advisory agreement. Compensation payable to Eaton Vance pursuant to the Interim Agreement was required to be held in an interest-bearing escrow account with the Trust’s custodian. The Advisory Agreement was approved by Trust shareholders on May 13, 2021.

Morgan Stanley (NYSE: MS), whose principal offices are at 1585 Broadway, New York, New York 10036, is a preeminent global financial services firm engaged in securities trading and brokerage activities, as well as providing investment banking, research and analysis, financing and financial advisory services. As of December 31, 2022, Morgan Stanley’s asset management operations had aggregate assets under management of approximately \$1.3 trillion.

Under the general supervision of the Trust’s Board, the Adviser will carry out the investment and reinvestment of the assets of the Trust, will furnish continuously an investment program with respect to the Trust, will determine which securities should be purchased, sold or exchanged, and will implement such determinations. The Adviser will furnish to the Trust investment advice and office facilities, equipment and personnel for servicing the investments of the Trust. The Adviser will compensate all Trustees and officers of the Trust who are members of the Adviser’s organization and who render investment services to the Trust, and will also compensate all other Adviser personnel who provide research and investment services to the Trust. In return for these services, facilities and payments, the Trust, has agreed to pay the Adviser as compensation under the Advisory Agreement a fee computed at an annual rate of 0.75% of the average daily gross assets, payable monthly. For purposes of this calculation, “gross assets” of the Trust shall mean total assets of the Trust, including any form of investment leverage, minus all accrued expenses incurred in the normal course of operations, but not excluding any liabilities or obligations attributable to investment leverage obtained through (i) indebtedness of any type (including, without limitation, borrowing through a credit facility or the issuance debt securities), (ii) the issuance of preferred stock or other similar preference securities, (iii) the reinvestment of collateral received for securities loaned in accordance with the Trust’s investment objectives and policies, and/or (iv) any other means. During periods in which the Trust is using leverage, the fees paid to Eaton Vance for investment advisory services will be higher than if the Trust did not use leverage because the fees paid will be calculated on the basis of the Trust’s gross assets, including proceeds from any borrowings and from the issuance of preferred shares. The Trust is responsible for all expenses not expressly stated to be payable by another party (such as the expenses required to be paid pursuant to an agreement with the investment adviser or administrator).