## Rockhopper Catch Efficiency Study Use in Stock Assessments

Each line below represents a specific assessment and how NTAP Catch Efficiency data was used in that assessment. Information is submitted annually by the lead NEFSC assessment scientist.

ASSESSMENT	<b>STOCK</b>	How was the Rockhopper Study Used in this Assessment?
<b>YEAR</b> • 2024	Skate complex	Skates were not sampled in all the studies and have not been valuated
2024	Skale complex	as far as I know.
2024	Witch flounder	Experimental catchability estimates were directly incorporated into the
		catchability coefficients that varied by year; the revised catchability
		catchability estimates were directly incorporated into the biomass
		to expand survey to population estimate
2024	Butterfish	Butterfish wasn't in the rockhopper study
2024	Yellowtail flounder - Southern New England / Mid-Atlantic	Experimental catchability estimates were used to calculate a survey swept area biomass for the alternative Plan B assessment. The
		primary AIM assessment provides only relative indices of abundance and fishing mortality, and so catchability estimates would not have
		affected those results.
2024	American plaice	Results of the Rockhopper Catch Efficiency Study were utilized in exploratory runs during the last Research Track for American plaice but
		are not currently used in the Management Track assessment.
2024	Golden Tilefish	The survey is not used as an index of abundance for tilefish
2024	Atlantic surfclam	Surfclam are not caught in trawl nets
2024	Black sea bass	Bottom Trawl Data from national and state surveys was combined in a single VAST index
2024	Yellowtail flounder Georges Bank	Biomass indices derived from the Catch Efficiency Research were
		approach used q from Catch Efficiency Research to expand survey to
2023	Red hake - North	Empirical approach used a from Catch Efficiency Research to expand
2020		survey to population estimate
2023	Silver hake - North	Silver hake was not one of the species examined in this study
2023	Red deepsea crab	Survey does not reach the habitat of deep sea red crab
2023	Spiny dogfish	Spiny dogfish were not examined in the study
2023	Silver & Offshore hake - South	Silver and offshore hake were not examined in this study.
2023	Summer flounder	Average BIG sweep efficiency at length based on a) the 2015-2017 given studies (averall $a = x^0.5$ ) b) individual tow wigespreads, and a)
		annual total survey strata area. All three of these factors are used to
		survey indices to absolute Swept Area Numbers (SWAN).
2023	Bluefish	Not relevant
2023	Longfin inshore squid	Longfin squid were not part of the subject study. Regardless, the assessment uses a different method to compute survev-specific a
		estimates for "daytime" tows
2023	Red hake - South	Empirical approach used q from Catch Efficiency Research to expand survey to population estimate
2023	Windowpane flounder - South	Relative index used for the AIM model
2023	Acadian redfish	The study did not produce catchability estimates for redfish.
2023	Windowpane flounder - South	Empirical approach used q to expand survey to population estimate
		and estimate exploitation rates as plan B.
2023	Atlantic mackerel	Not relevant
2023	Red hake	Empirical approach used q from Catch Efficiency Research to expand survey to population estimate
2023	Skate complex	No information available for skates
2023	Windowpane flounder - North	Empirical approach used q from Catch Efficiency Research to expand
		survey to population estimate
2022	Atlantic halibut	Halibut are caught too infrequently (insufficient sample size)
2022	Atlantic wolffish	Wolffish was not one of the species examined in this study
2022	Winter flounder - Southern New England / Mid-Atlantic	The model derived catchability estimate was directly compared with the experimental catchability estimate for use as a diagnostic.
		Averages of the NEFSC spring and fall survey values were calculated to account for inter-survey variation and also to provide an estimate
		that could be considered for the start of the calendar year.
2022	Atlantic herring	Herring was not a focal species of the study
2022	Haddock - Georges Bank	Experimental catchability estimates were not used because not enough of the species were caught to provide a comparison between
2022	Winter flounder Southern New	the gear types and produce an estimate of catchability.
2022	England / Mid-Atlantic	swept area biomass and compared to Jan-1 biomass from the model
2022	Winter flounder - Gulf of Maine	as a cneck on scale.
2022		biomass estimate, Empirical approach used q from Catch Efficiency Research to expand survey to population estimate 30+ cm biomass is
		estimated from survey area swept expansions which rely on the
2022	Monkfish - North	Empirical approach used g from Catch Efficiency Research to expand
-		survey to population estimate
2022	Witch flounder	Experimental catchability estimates were directly incorporated into the assessment model. Estimates of population biomass used revised
		catchability coefficients that varied by year; the revised catchability coefficients had a minor impact on catch advice., Experimental
		catchability estimates were directly incorporated into the biomass estimate, Empirical approach used q from Catch Efficiency Research
		to expand survey to population estimate
2022	Ocean pout	Ocean pout was not one of the species examined in this study
2022	Pollock	Experimental catchability estimates are not available for pollock.
2022	Spiny dogfish	Not considered - experiments were not designed for spiny dogs
2022	Yellowtall flounder Georges Bank	Empirical approach uses d from Sweep Efficiency Research to expand survey to population estimate
2022	Monkfish - South	Empirical approach used q from Catch Efficiency Research to expand
2022	Winter flounder - Georges Pook	survey to population estimate
2022		range of winter flounder sampled during the studies was not representative of the size rance of the GR winter flounder stock: the
		sampled fish were too small.
2022	Haddock - Gulf of Maine	Not appropriate for ground fish.
2022	Butterfish	Butterfish was not one of the species examined in this study
2022	Striped bass	No NEFSC survey info in this assessment
2021	Summer Flounder	Average BIG sweep efficiency at length based on the 2015-2017 sweep studies (overall q = $\sim$ 0.5), b) individual tow windsbreads, and c)
		annual total survey strata area. All three of these factors are used to raise the sweep efficiency and individual tow wingspread adjusted
2020	Minter Ar L C	survey indices to absolute Swept Area Numbers (SWAN).
2020	vvinter flounder Southern New England/Mid-Atlantic	The swept area biomass indices derived from the Sweep Efficiency Research were used as a check on the age-structured assessment
2020	Winter flounder Coorres Darl	results.
2020	winter nounder Georges Bank	reflect the length composition for the Georges Bank stock (i.e., the studies included faw field 28 am total length)
2020	Southern New England/Mid-Atlantic	Sweep Efficiency Research catchability estimates were used to
	Windowpane flounder	calculate a survey swept area biomass and calculate exploitation rates. The primary AIM assessment provides only relative indices of
		abundance and fishing mortality, and so catchability estimates would not have affected those results.
2020	Windowpane flounder Gulf of	Sweep Efficiency Research catch efficiency directly incorporated into
	Maine/Georges Bank	the biomass estimate
2020	Red hake Southern Georges Bank/Mid- Atlantic	Sweep Efficiency Research catch efficiency directly incorporated into the biomass estimate
2020	Red hake Gulf of Maine/Northern	Sweep Efficiency Research catch efficiency directly incorporated into
2020	Georges Bank	the biomass estimate
2020	vvinter tiounder - Gulf of Maine	Sweep Efficiency Research catch efficiency directly incorporated into the 30+cm biomass estimates
2020	Eastern Georges Bank (TRAC)	Not applicable
2020	Georges Bank (TRAC) Vellouteil	Empirical approach uses a from Sween Efficiency Research to expend
2020	Flounder	survey to population estimate
2020	Eastern Georges Bank (TRAC) Atlantic	Not applicable
2019	Winter flounder - Georges Bank	The efficiency estimate from the study was not used because the size
_0.0		range of winter flounder sampled during the studies was not representative of the size range of the GB winter flounder stock: the
		sampled fish were too small.
2019	American Plaice	Model's derived catchability estimate was directly compared with the experimental estimate for use as a diagnostic
2019	Southern New England/Mid-Atlantic	Experimental catchability-corrected, swept area biomass was directly
		stream in a series of sensitivity runs. But not in the accepted base model
2019	Gulf of Maine/Georges Bank	Catchability was central to Plan B: but Plan A was accorted
2013	Windowpane	Catonability was contractor Field D, but Field A was accepted
2019	Halibut	No estimate available; too few fish
2019	Southern New England/Mid-Atlantic	Catchability was central to Plan B; but Plan A (AIM model) worked well
2019	Cape Cod /Gulf of Maine Yellowtail	Catchability estimate was directly compared with the experimental
_0.0	Flounder	estimate for use as a diagnostic
2019	Witch Flounder	Catch efficiency Directly incorporated into the biomass estimate

You can view the paper that describes the methods used to estimate relative catch efficiency and its uncertainty, for rockhopper and chainsweep gears for the NEFSC bottom trawl survey as well as how calibrated swept area numbers at length and biomass are estimated, "Estimation of survey efficiency and biomass for commercially important species from industry-based paired gear experiments." Timothy J. Miller, David E. Richardson, Philip J. Politis, Christopher D. Roebuck, John P. Mandersond, Michael H. Martin, Andrew W. Jones

For a Glossary of Terms visit: NOAA Fisheries <u>Glossary</u> (71 pgs.) NEFMC <u>Glossary</u> of Fisheries <u>Management and Science Terms</u> (16 pgs.) Stock SMART <u>Data Dictionary</u> (11 pgs.)