# Conclusions

The current MP for Canadian Sablefish (MP15, \*\*noCap\*\*), which includes no

limits on at-sea releases, was able to meet biological objectives

(i.e., Fishery Objectives 1-3) under both

reference and robustness OMs, although it ranked near the bottom in terms

of catch performance compared to MPs with at-sea release management measures. Of

the MPs with management measures for at-sea releases, MP14 (no size limit),

MP17 (0% cap, 5 year amortization), MP3 (50% cap, historical allocation, and 5-year

amortization) ranked among the top-3 most often under both reference

and robustness OMs, provided that maximum target fishing mortality

rates were tuned to meet the first three Fishery Objectives.

As indicated in previous MSE work, no size limit MPs result in the

highest average annual landed catch while still allowing the fishery

to meet biological objectives in both the short- and long-term

(actually, 100% avoidance would be superior to NSL, but we did

not consider that here) [@cox2019evaluating]. Landed

value is also greatest for a no size limit MP, suggesting that price

premiums that place relatively low value on sub-legal Sablefish are not

that influential when measured over 10 years. These results held across

reference and robustness OMs; however, it should be noted that we did

not include variable costs of fishing in our analysis, nor did we

consider the consequences of these MPs for the fisheries

in targeting other species in the integrated groundfish

fishery in BC.

The no size limit MP produced 500 t and 310 t more average annual

landed catch in the reference and robustness OMs, respectively,

compared to the next-best performing MP. Given the current

price structure for Sablefish size, these differences equate to

approximately $8.5 million/yr in average annual total landed

value under the reference OM and $5.3 million/yr under the

robustness OM.

For MPs involving a size limit, the range of differences in

annual average catch among all MPs was 410 t and 200 t,

for reference and robustness OMs, respectively. These equate

to approximately $7.7 million/yr in average annual total

landed value under the reference OM and $3.6 million/yr under

the robustness OM.

The largest conservation risk appears to be tuning an MP to meet

conservation objectives under the reference OM only to find out,

in the future, that the 2015 year-class was over-estimated, or did

not materialize as hoped (which would not be unprecedented in

fisheries). We tested the implications of such a scenario by simulating

a cross-test of MP performance under the robustness OMs where maximum

target fishing mortality was tuned under the reference OMs. As

expected, performance against Fishery Objectives 2 and 3 was poor for all MPs

in these trials.

On the other hand, the opposite cross-test — robustness-tuned MPs

against the reference OMs — showed that robustness-tuned MPs do

exceptionally well against Fishery Obectives 1-3 under the

reference OMs. Therefore, the cost in yield of adopting a

robustness-tuned MP is relatively low given the high additional

certainty regarding conservation performance. These annual

yields are still considerably larger than those achieved in

recent years.

Revisions to the strategy could be made in the next MSE (2020-2022)

cycle when the 2015 year-class size should be better estimated as

several more years of fishery and survey data accumulate.