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ADJUSTING SET LIMITS FOR NUMBER OF FAD DEPLOYMENTS

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The limit on the number of sets recommended by the staff needs to take into account the increase in the catch per set (CPS) due to improved efficiency of the purse-seine fleet. For example, the catch-per-successful set (CPSS) has been shown to increase with the number of FAD deployments ([SAC-09 INF-D](#)). The obvious solution is to limit the number of FADs per vessel; however, the number of FADs owned per vessel is not known, the appropriate number of FADs per vessel cannot be determined with the available data, and there would be several issues associated with monitoring the number of FADs per vessel. Therefore, the staff developed a factor to adjust the annual limits on the number of sets to compensate for the increase in the number of FAD deployments.

The relationship between the number of FAD deployments, which have been increasing over time ([SAC-09-16](#)) and CPSS was determined ([SAC-09 INF-D](#)) based on annual per-vessel data. Therefore, the total annual number of FAD deployments had to be converted into a per-vessel basis for the calculations. FAD deployments increased by 24.2% during 2013-2016, so a representative number of FAD deployments by a single vessel (300) was increased by the same percentage, to 373. The corresponding increase in CPSS was then calculated from the relationships for each of the four years (2012-2015) shown in Lennert-Cody *et al.* (2018) ([Table 1](#)), for an average annual percentage increase in CPS of 2.7%, and the annual set limit was reduced each year by this percentage, starting from the 2015-2017 average to be applied in 2018.

Due to the practical difficulties of monitoring floating-object sets alone, the staff recommends that the limit be applied to the both floating-object and unassociated sets combined. The average number of combined floating-object and unassociated sets during 2015-2017 was 22,200, and therefore the recommended set limits for 2019 and 2020, the remaining two years covered by Resolution [C-17-02](#), are 21,031 and 20,470, respectively ([Table 2](#)).

**References**

Lennert-Cody, C.E., Moreno, G., Restrepo, V., Roman, M.H., and Maunder, M.N. 2018. Recent purse-seine FAD fishing strategies in the eastern Pacific Ocean: what is the appropriate number of FADs at sea? ICES Journal of Marine Science (2018), doi:10.1093/icesjms/fsy046

**TABLE 1.** Relationship between CPSS and number of deployments (D), for each year during 2012-2015.  $CPSS = a + b * D$  (from Lennert-Cody *et al.* (2018)).

	Intercept (a)	Slope (b)
2012	22.033	0.1170
2013	29.054	0.0184
2014	23.965	0.0173
2015	17.321	0.0339

**TABLE 2.** Recommended limit for floating-object (OBJ) and unassociated (NOA) sets combined, 2018-2020, adjusted for the increase in the number of FAD deployments.

	OBJ + NOA
2015-2017 average	22,200
2018	21,608
2019	21,031
2020	20,470