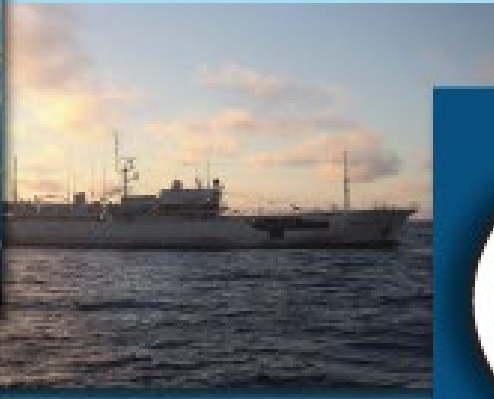


Comisión Interamericana del Atún Tropical
Inter-American Tropical Tuna Commission



CAUSES OF THE INCREASE IN FLOATING-OBJECT SETS IN THE EASTERN PACIFIC OCEAN IN
RECENT YEARS: AN ANALYSIS

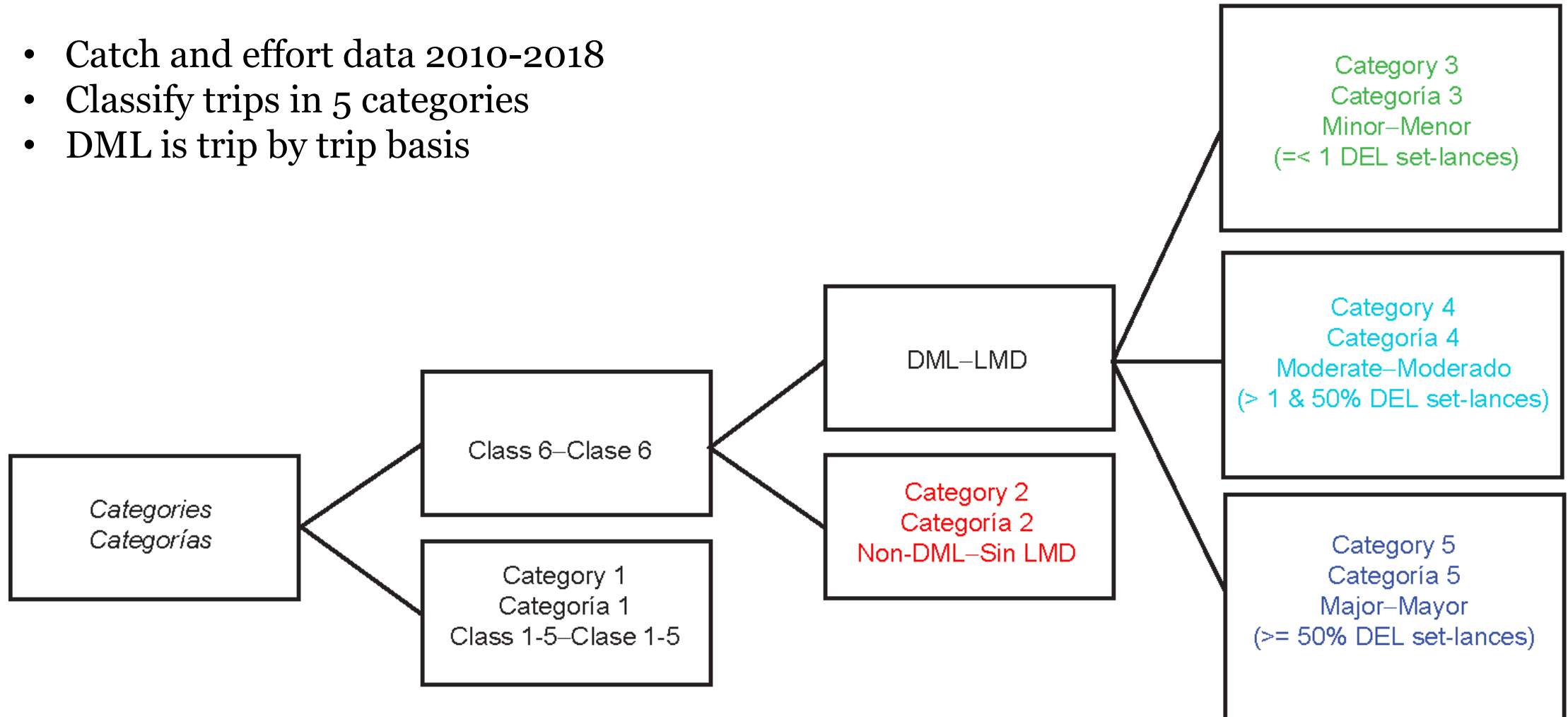
Jon Lopez, Cleridy E. Lennert-Cody, Mark N. Maunder, Nickolas W. Vogel and Ernesto Altamirano

Background

- OBJ sets have increased substantially since the mid-1990s, especially in recent years.
- FADs may have negative impacts on the ecosystem and tuna populations. Because of that, the Commission have adopted a series of Resolutions that try to reduced these impacts.
- Resolution C-17-02 limited the number of active FADs. However, this measure may not be enough to guarantee that the status of the stocks is healthy.
- Developing alternative conservation measures is a long-term process, and meanwhile, the number of sets on floating-objects keeps increasing.
- This study investigates the causes of this continued increase, through an analysis of fleet components.

Data and methods

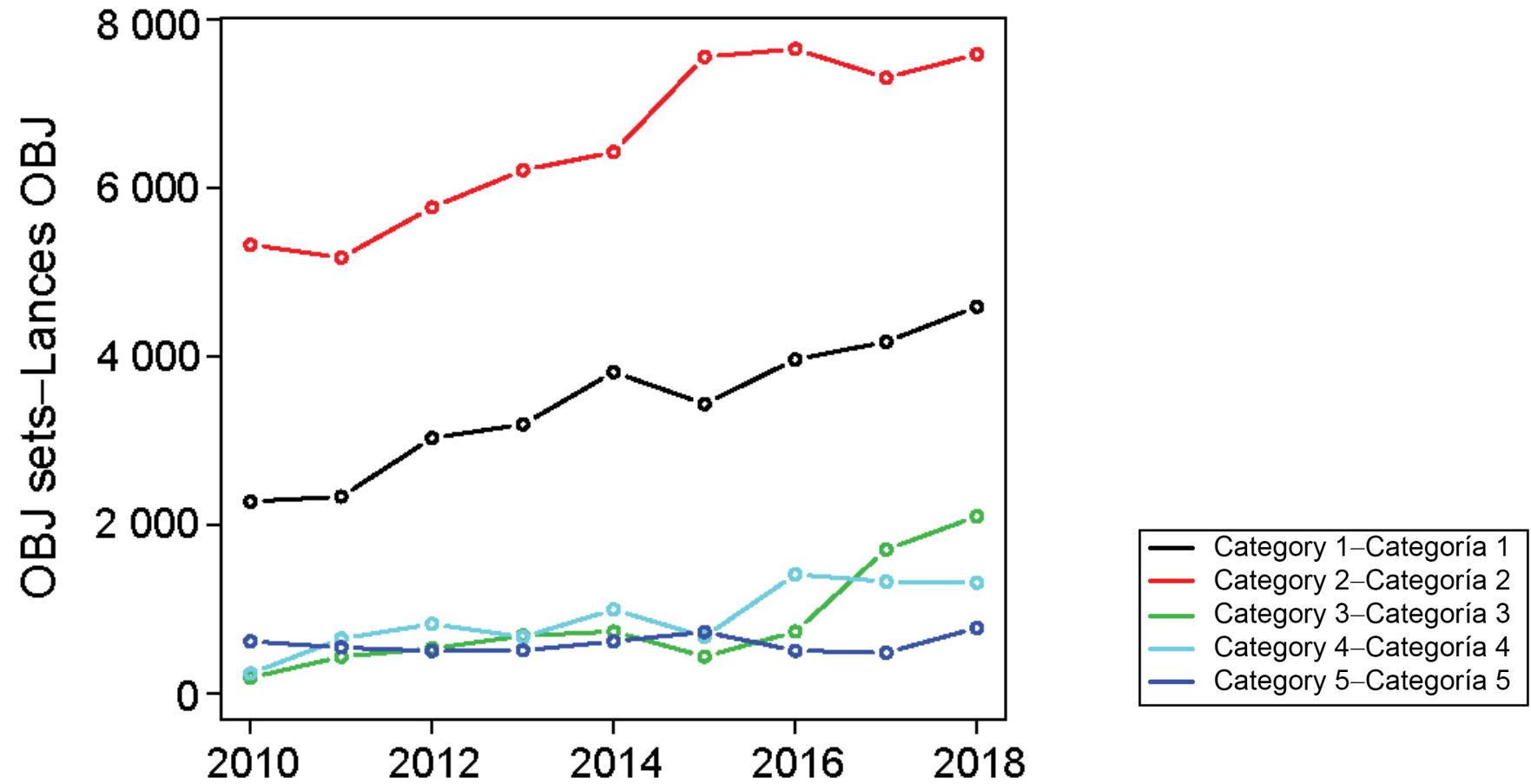
- Catch and effort data 2010-2018
- Classify trips in 5 categories
- DML is trip by trip basis



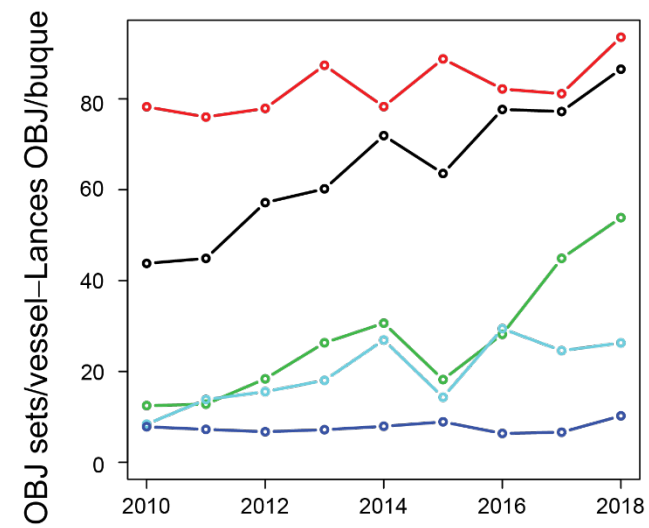
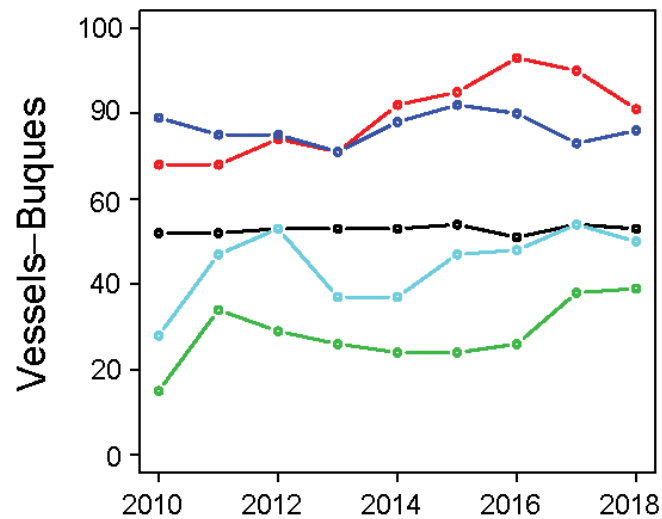
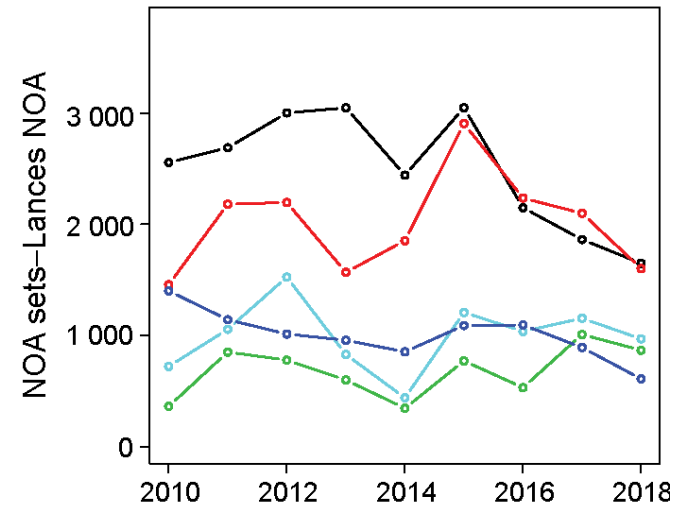
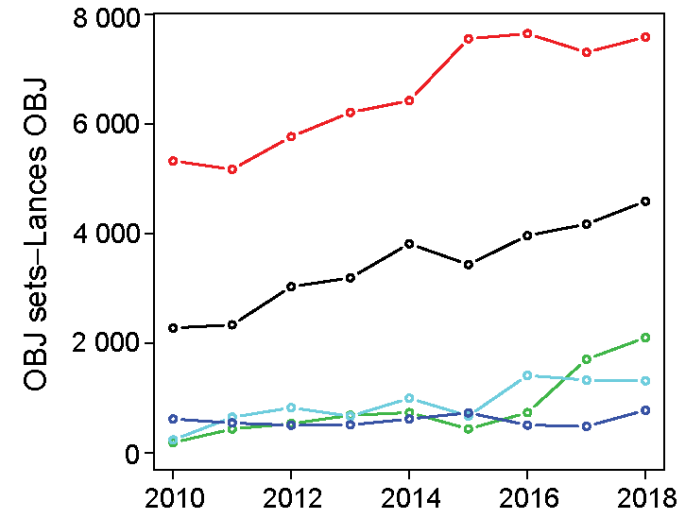
Data and methods

- Series of indicators by trip departure year and category
 - number of sets, by set type (NOA, OBJ);
 - total number of sets (all set types: DEL+NOA+OBJ);
 - proportion of set types;
 - number of trips;
 - number of vessels;
 - number of days fishing;
 - average trip duration (days);
 - number of OBJ/NOA/ALL sets per day fishing;
 - number of OBJ/NOA sets per vessel;
 - catch of tropical tunas (yellowfin+bigeye+skipjack) per OBJ set.

Results – Long term and short term

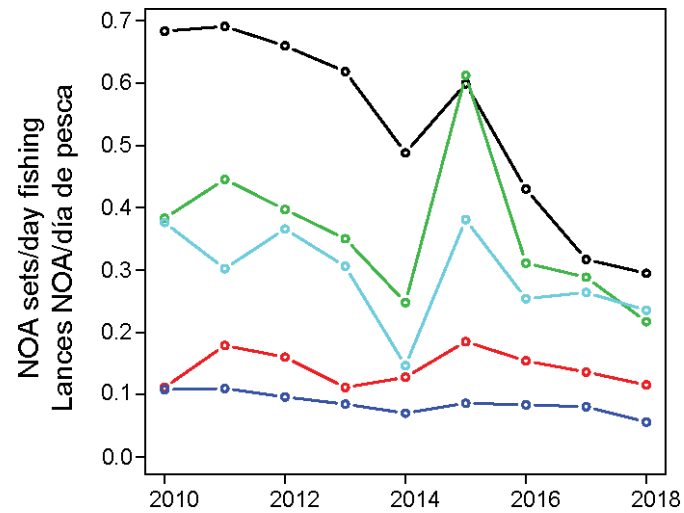
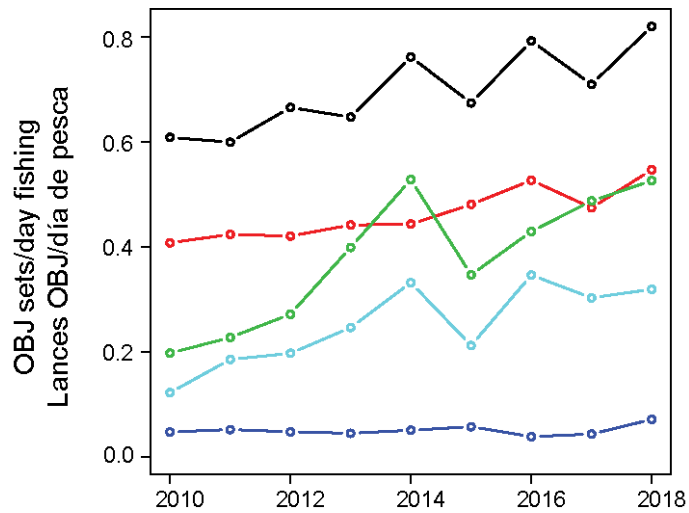
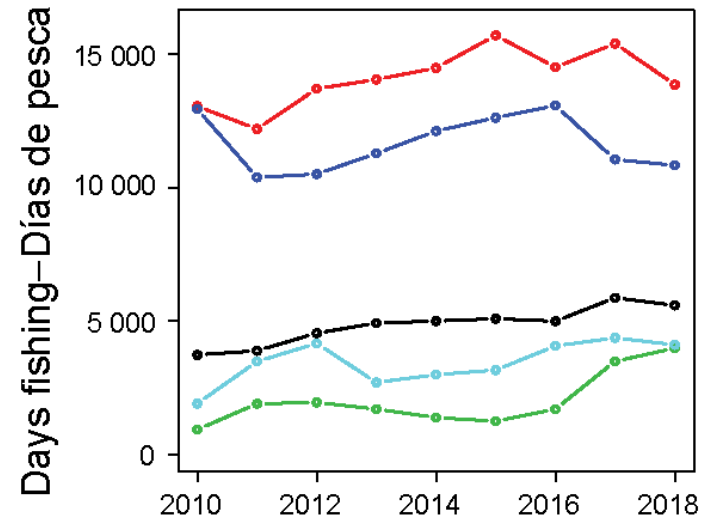
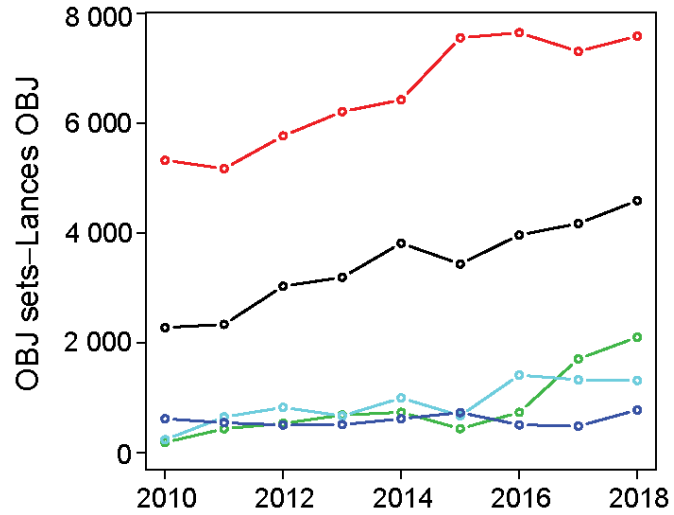


Results – Category 1 (Class 1-5) increases



- Category 1—Categoría 1
- Category 2—Categoría 2
- Category 3—Categoría 3
- Category 4—Categoría 4
- Category 5—Categoría 5

Results – Category 3-4 (minor/moderate DEL DML vessels) increases

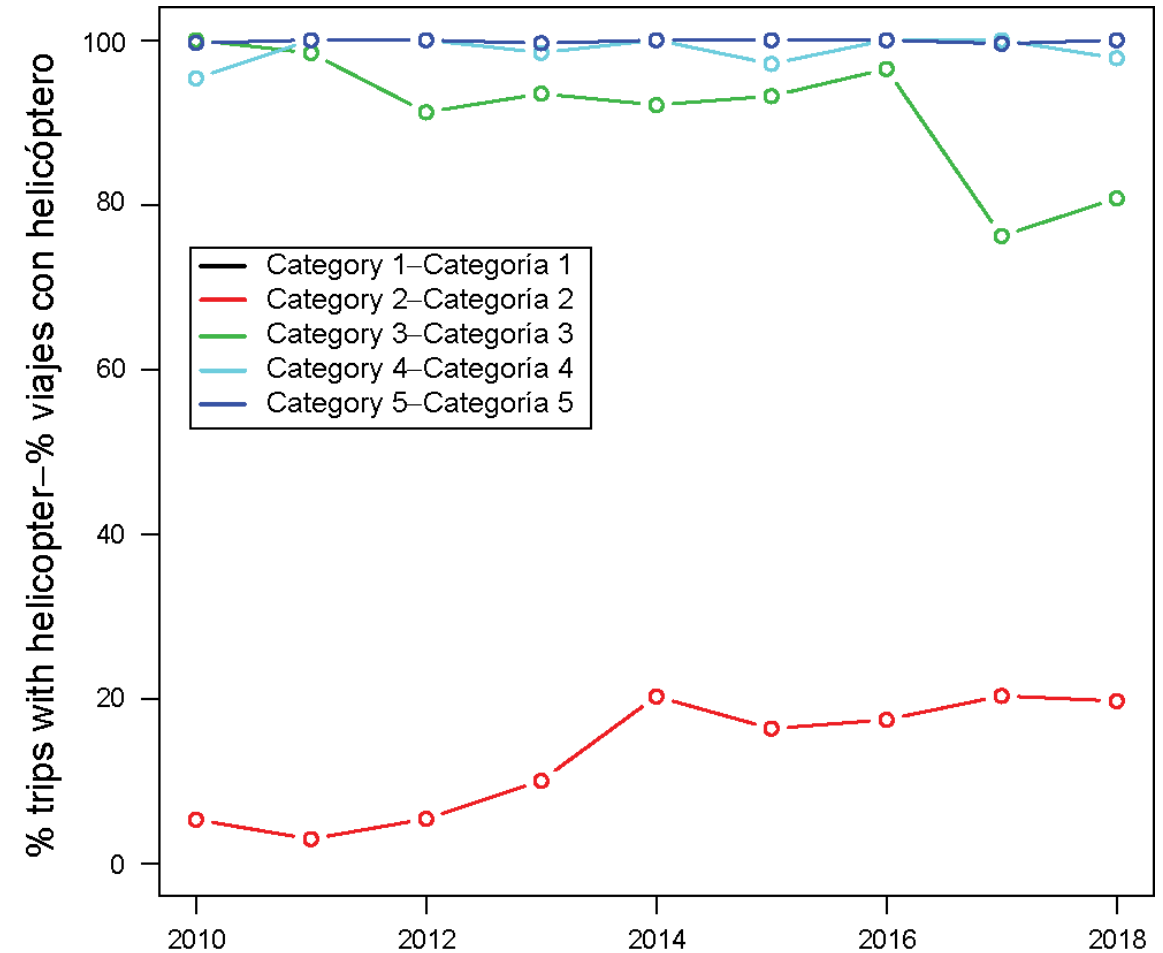


- Category 1—Categoría 1
- Category 2—Categoría 2
- Category 3—Categoría 3
- Category 4—Categoría 4
- Category 5—Categoría 5

Conclusions

- Flexibility in the system
 - Vessels can freely change DML/non-DML

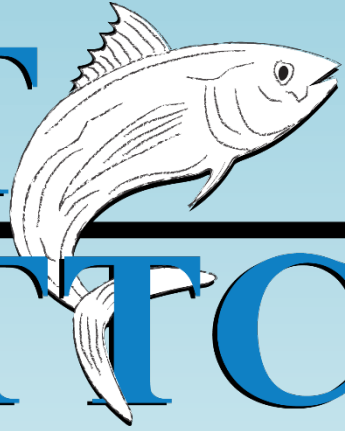
Trip category	% of deployments			Deployments per vessel		
	2016	2017	2018	2016	2017	2018
2	92.8	88.5	84.8	161	203	246
3	4.2	8.0	11.2	28	51	79
4	2.4	2.5	3.0	8	12	16
5	0.6	1.0	1.0	1	3	3



Conclusions

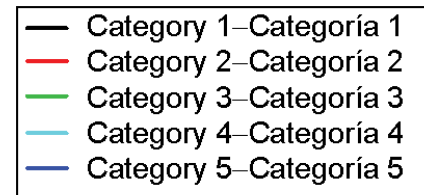
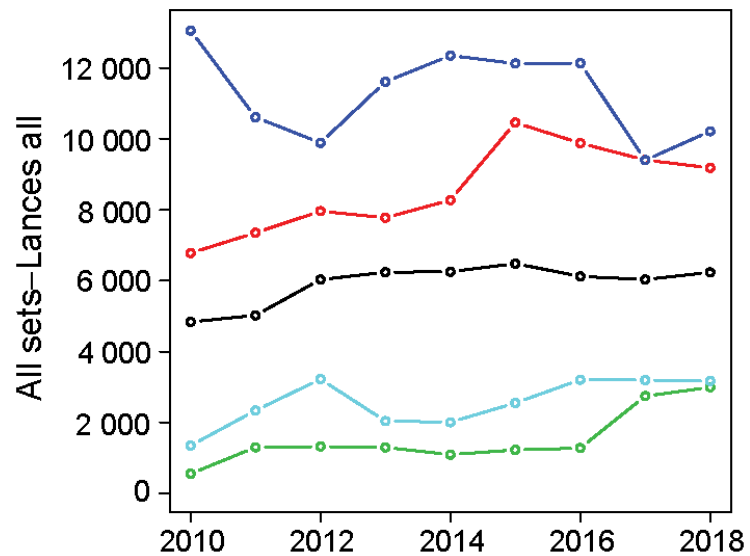
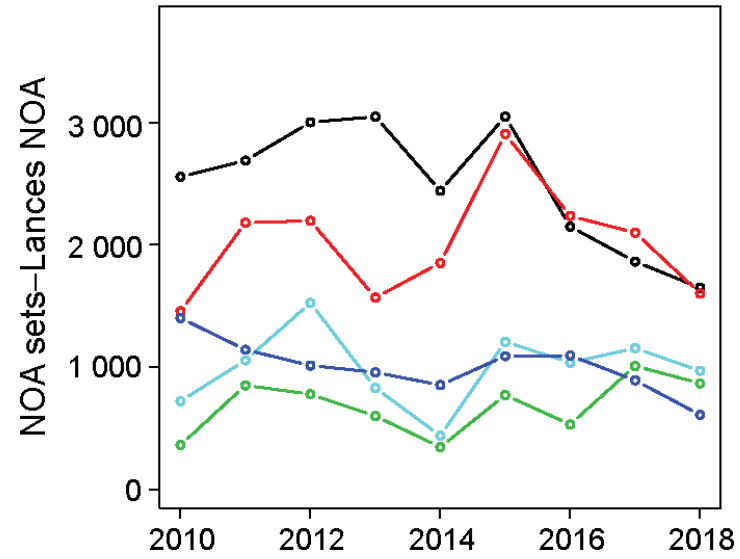
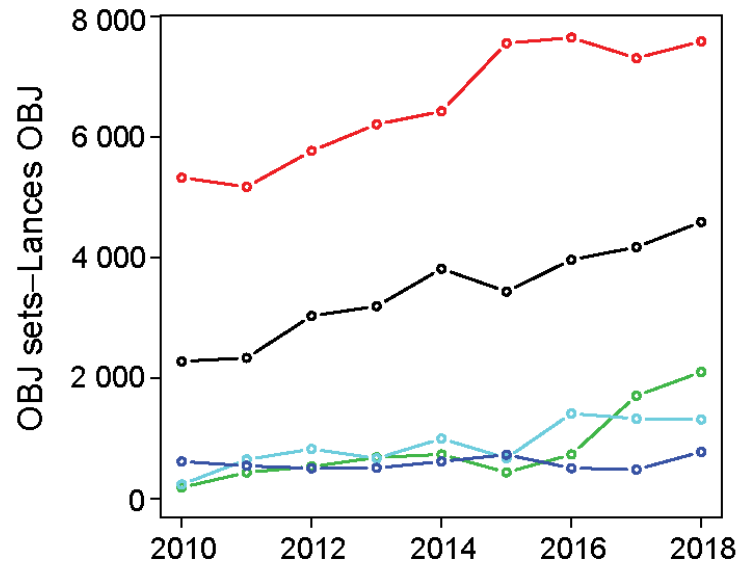
- The increase in floating-objects sets in the purse-seine fishery since 2015 is due mainly to
 - Class 1-5 vessels, and
 - trips by Class-6 vessels with a DML that were not focused on DEL fishing.
- For Class 1-5 vessels:
 - the increase appears to be due to a **switch from NOA sets to OBJ sets**, not to an increase in number of trips or vessels making OBJ sets.
- For trips by Class-6 vessels with a DML that were not focused on DEL fishing
 - the increase is partially due to **increased effort**, in terms of number of trips, vessels, days fishing, or number of sets per day fishing or per vessel.
 - Also, partially **switching from NOA sets to OBJ sets**.

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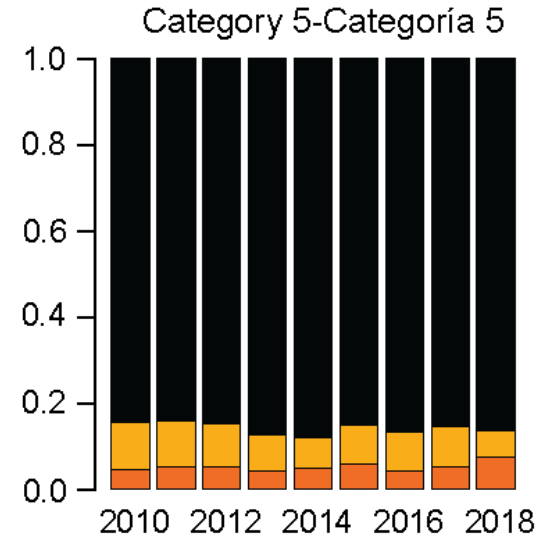
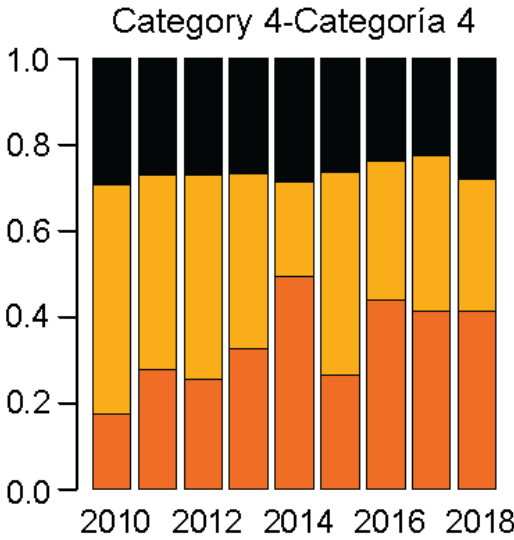
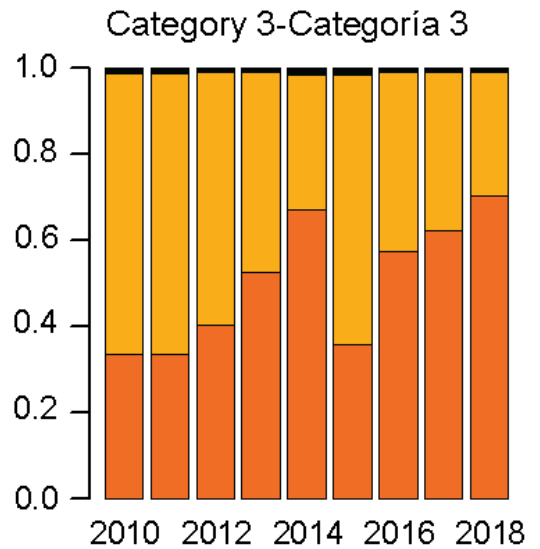
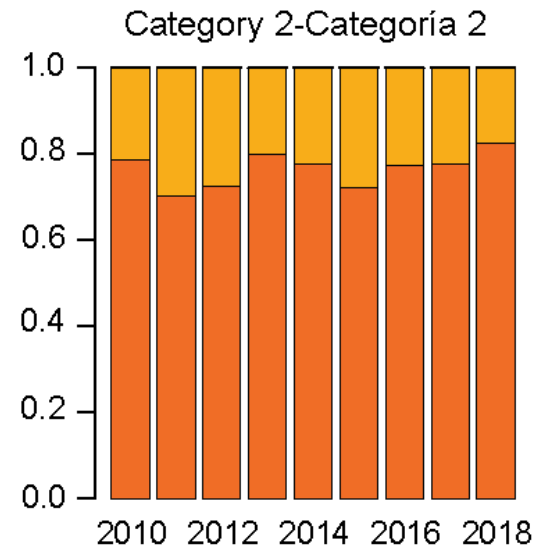
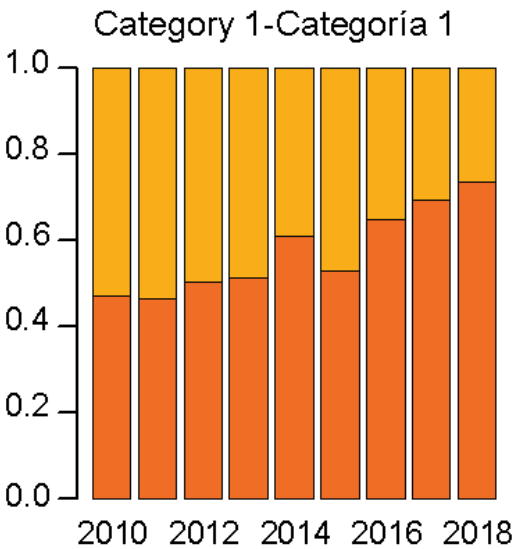
Questions

Results



Results

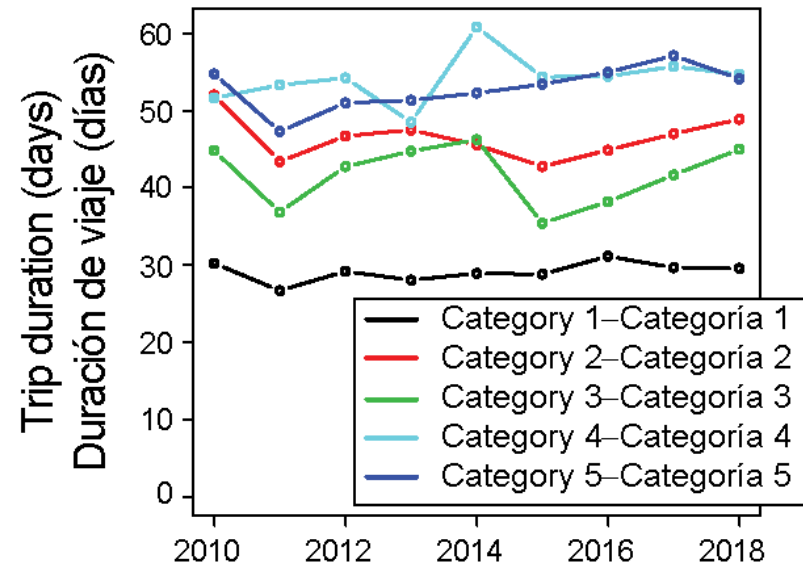
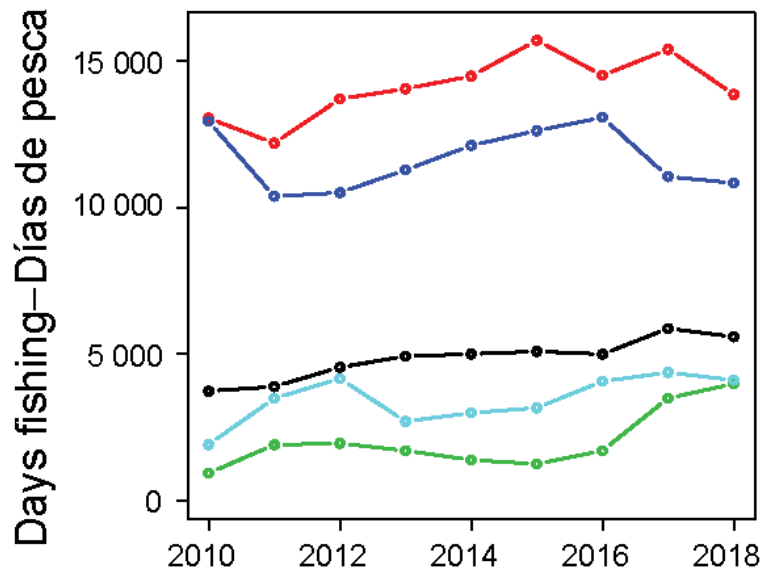
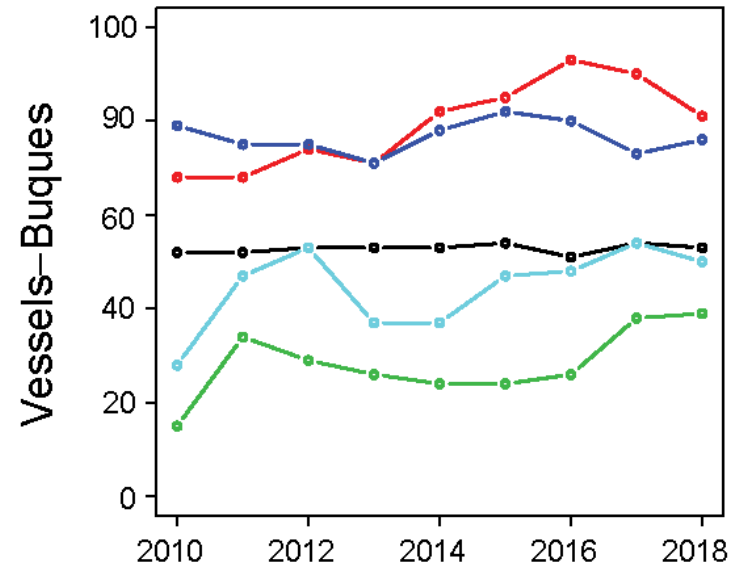
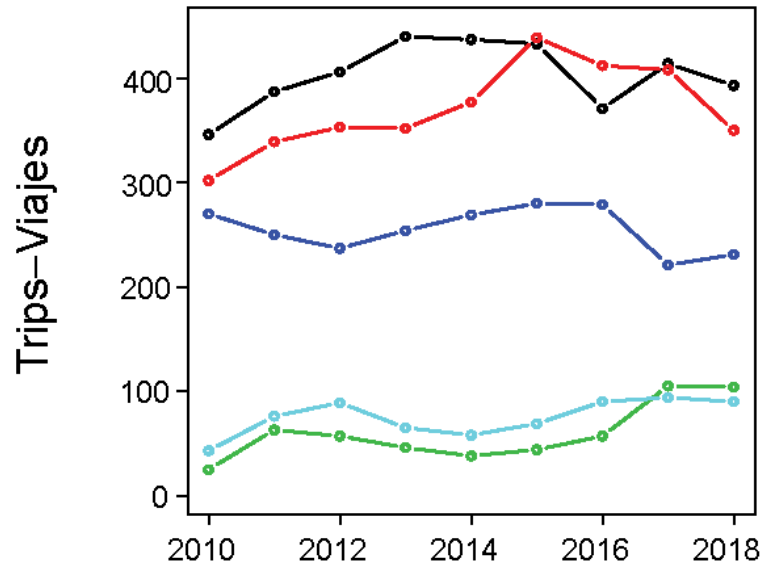
Proportion of sets—Proporción de lanzes



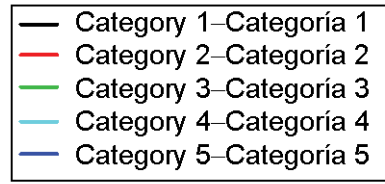
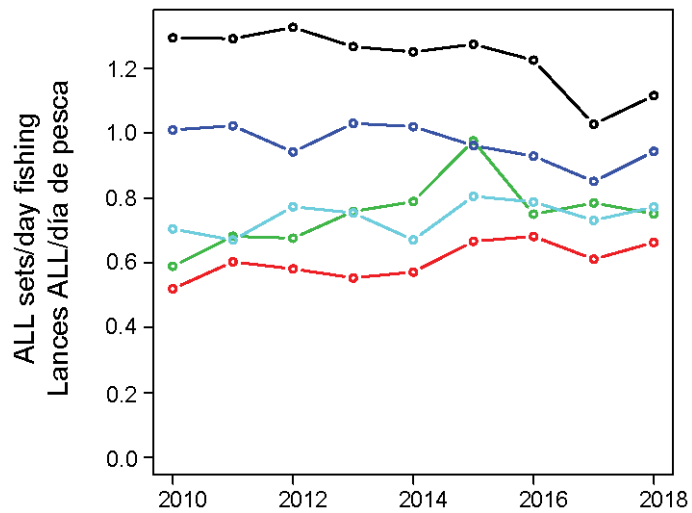
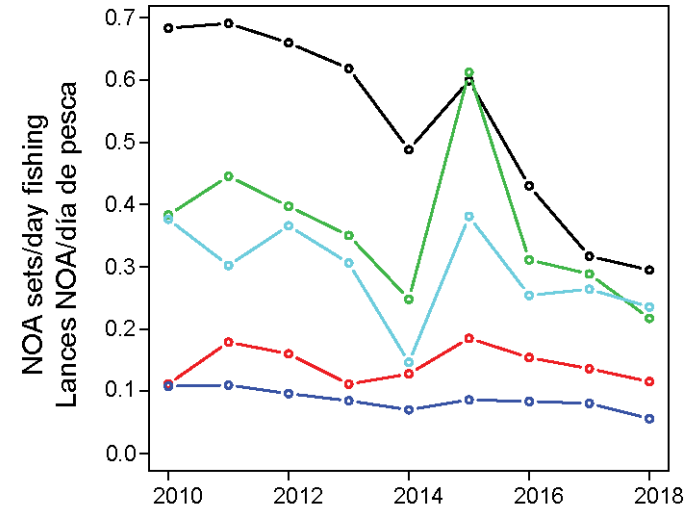
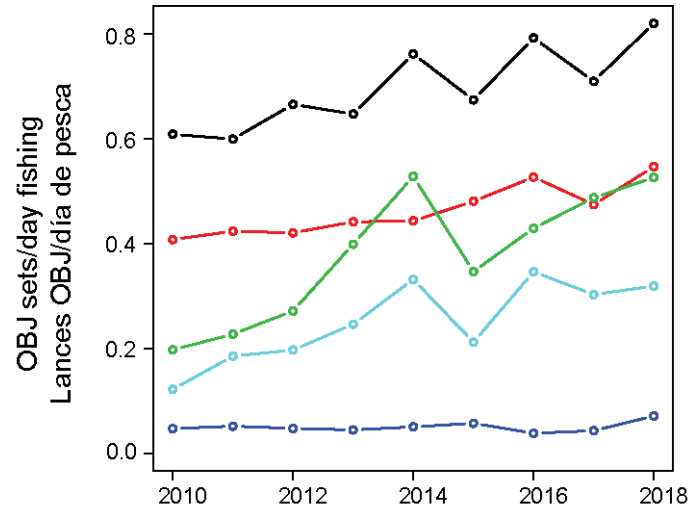
- DEL
- NOA
- OBJ



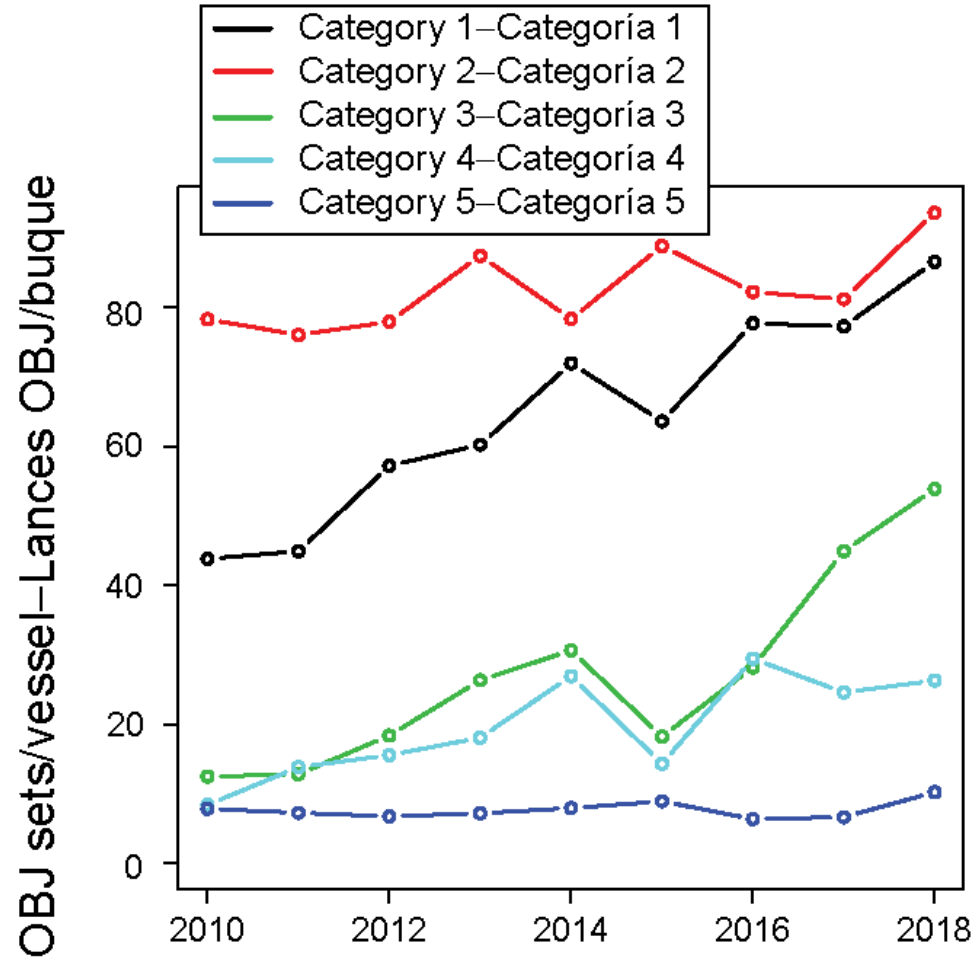
Results



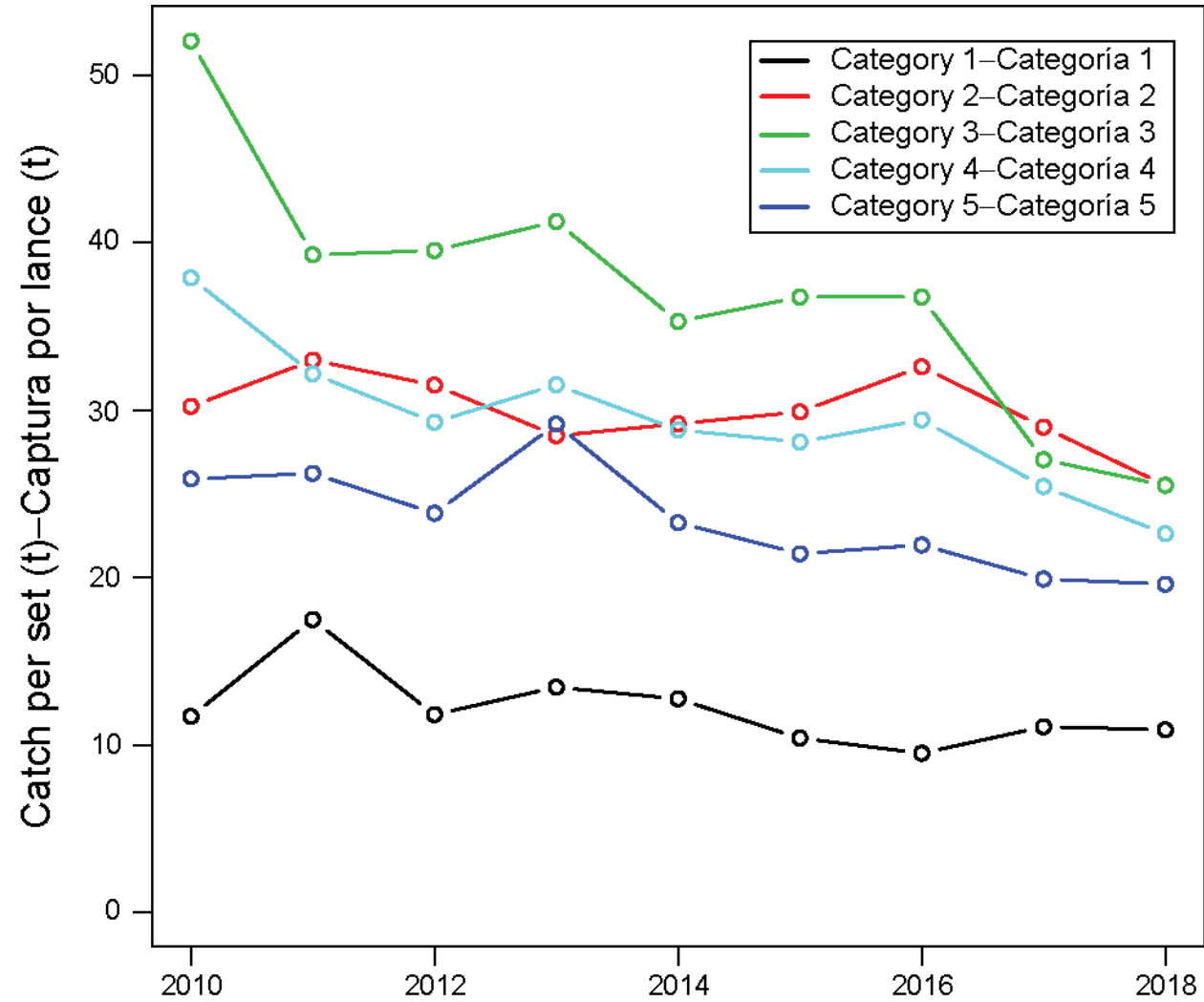
Results



Results



Results



Results

