

Pilot experiment to evaluate the survival of chub mackerel (*Scomber colias*) after slipping in the purse seine fishery

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Introduction

In the purse seine fishery, slipping is the release of excess and unwanted catch, by lowering the head rope of the net allowing the fish to escape. This maneuver occurs after the dry out of the net, which reduces the density of the catch, increasing the stress. Chub mackerel is one of the main species captured by the Portuguese purse seine fishery, but also one of the species most subject to slipping. For the first time, a pilot experiment was carried out to study the survival of chub mackerel after the practice of slipping and evaluate the physical and biological stress of individuals. Preliminary results on the survival of horse mackerel, unintentional introduced into the net pens, are also presented.

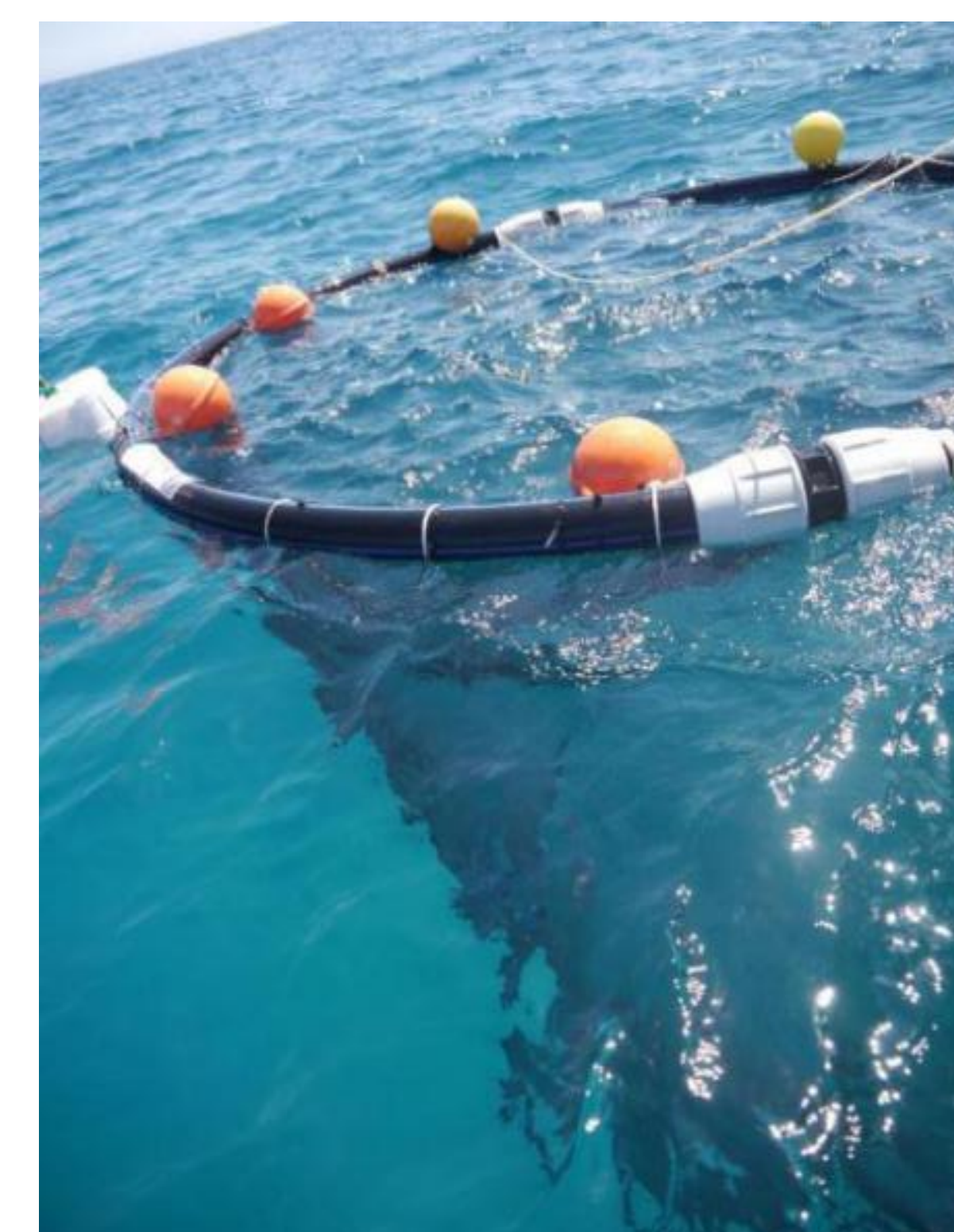
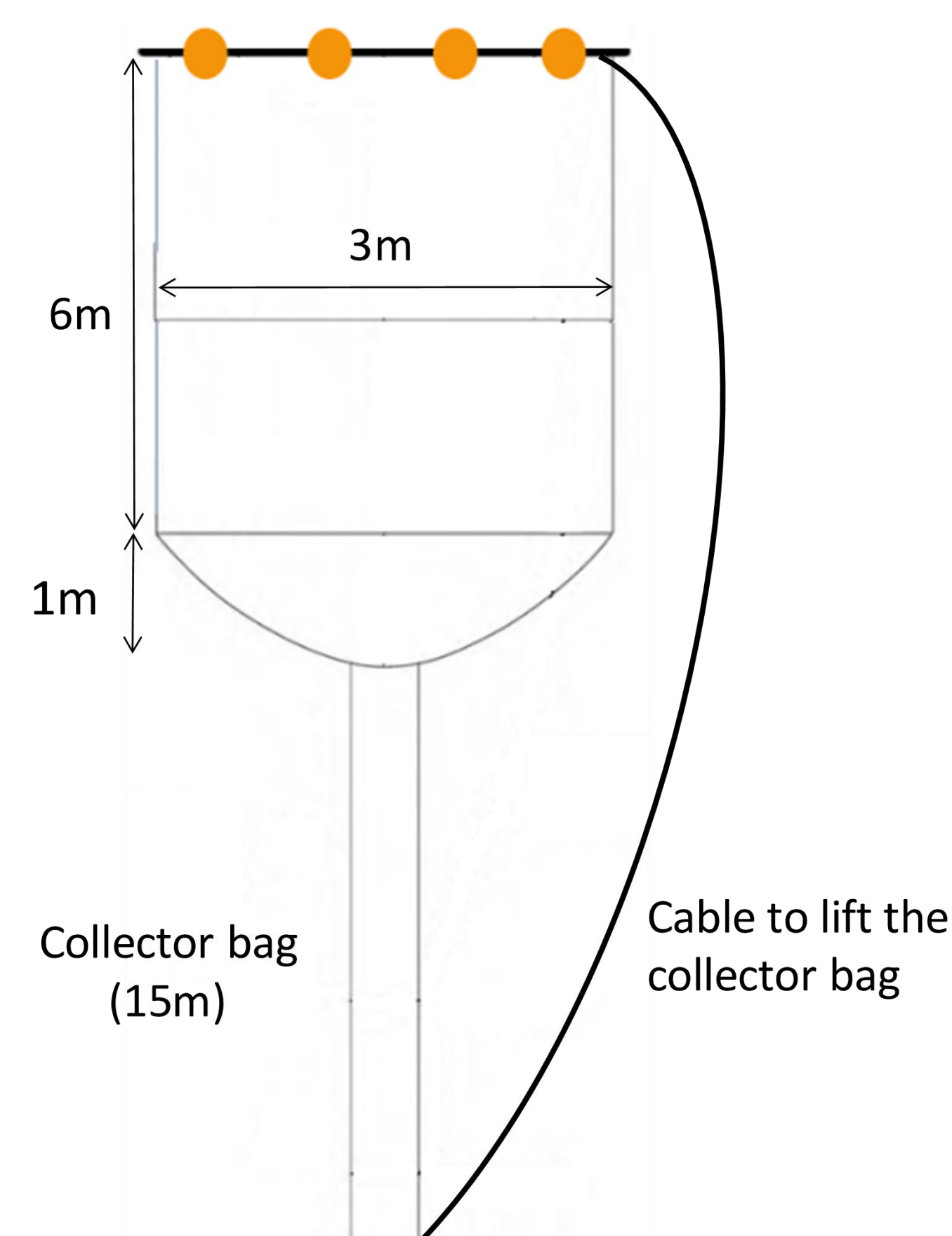


Figure 1: Scheme of the net pens (left) and net pen in the water during the experience (right).

Methods

- Study area: coast of Sesimbra, Southwest Portugal;
- Live fish were captured during a commercial purse seine operation and transferred to 2 net pens (control and slipping treatment) moored in open ocean (Fig. 1);
- Fish were monitored daily for 5 days (Fig. 2);
- Dead fish collected to evaluate survival;
- Blood samples were collected at start and end of the experiment to evaluate the stress;
- Environmental data were also collected.

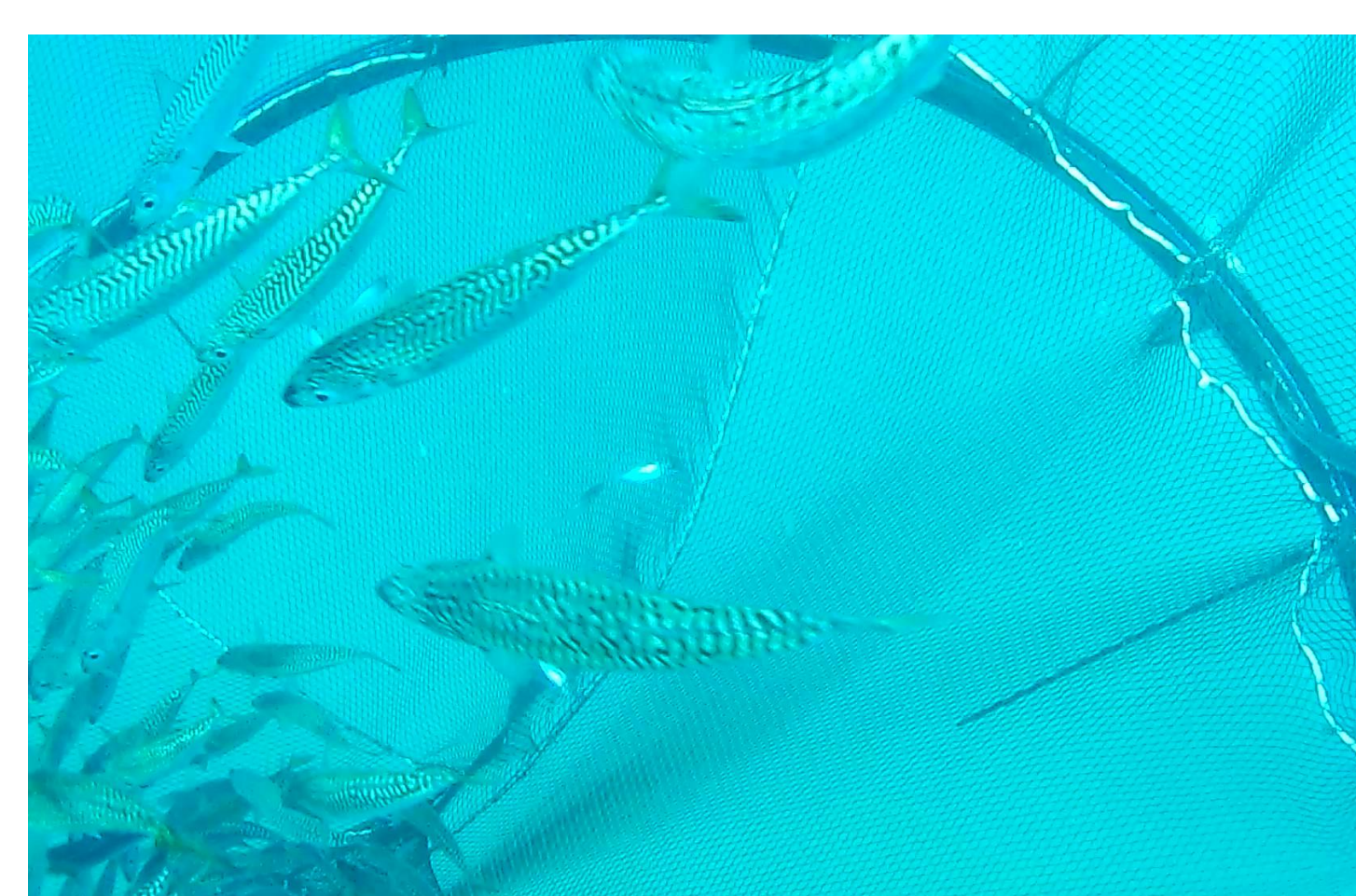


Figure 2: School of chub mackerel (left) and horse mackerel (right) inside the net pen.

Results

Chub mackerel:

- N ~ 200 - 250, lengths 19 - 29cm;
- Survival was high on both net pens (Fig. 3):
 - Control net pen - 97.6%
 - Slipping treatment net pen - 94.3%

Horse mackerel:

- N ~ 50 - 55, lengths 9 - 23cm;
- Showed substantially lower survival rate (Fig. 3):
 - Control net pen - 85%
 - Slipping treatment net pen - 35%

For both species and net pens, death individuals generally presented a poorer physical condition (skin damage, fin erosion and lower body condition) compared to the survivors.

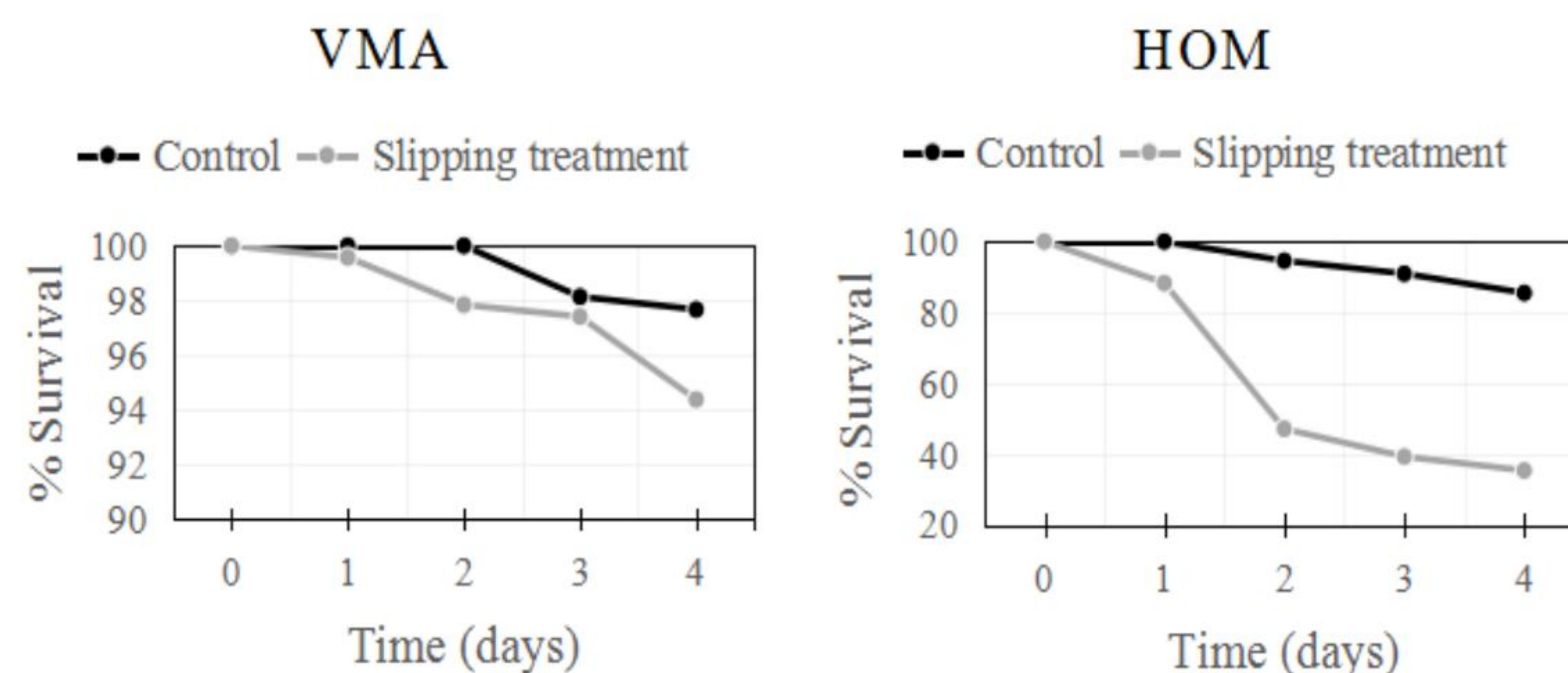


Figure 3: Daily survival rate (%) of chub mackerel (VMA) (left) and horse mackerel (HOM) (right), during the experiment. Control (black line) and slipping treatment (grey line).

Conclusion

This first evaluation suggested that slipping has a low impact on the mortality of medium sized chub mackerel in short term. Horse mackerel is one of four target species of purse-seiners and is also subject to slipping. Our results point to a high susceptibility of the species to slipping which deserves to be further investigated.

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