Evaluation of survival capacity and physiological recovery after longline capture of the blackspot seabream (*Pagellus bogaraveo*)
Financed by

Secretaría General de Pesca
INTRODUCTION
REDUCTION OF DISCARDS
(in relation to the time of capture)

Before
Selectivity improvements

After
Establish market outlets for bycatches

During
Survival (and recovery) after capture
WHAT DETERMINES SURVIVAL?  
(fishing as a stressor)

STRESS

PRIMARY responses

Hormones (CORTISOL)

SECONDARY responses

Energy mobilization and consumption (LACTATE)

TERTIARY responses

If the stressor is maintained over time (DEATH)
WHY IS IMPORTANT TO EVALUATE THE PHYSIOLOGICAL RECOVERY? (acute stress responses)
AIM OF THE STUDY

Evaluate

SURVIVAL RATES

PHYSIOLOGICAL RECOVERY

of the blackspot seabream (captured by longline in the Strait of Gibraltar)

Fish < 33 cm
EXPERIMENT IN GROUND FACILITIES
(time-course of physiological recovery)

N = 54 fish
(25.3 ± 0.2 cm)

Control
(undisturbed)

Stress
(chased for 10 minutes)

(Gesto et al., 2005)

Sampling times after acute stress:

0 h
5 h (Laiz-Carrion et al., 2005)
24 h
EXPERIMENT IN GROUND FACILITIES
(sampling and analysis)

Collection of blood plasma

Analysis

CORTISOL
( primary stress response)

LACTATE
( secondary stress response)
**EXPERIMENT IN GROUND FACILITIES**
(results)

**CORTISOL**

- **Graph:**
  - X-axis: Time (h) [0, 5, 24]
  - Y-axis: Cortisol (ng mL⁻¹)
  - Stress and Control groups compared.
  - Significant changes noted at 5 and 24 hours.

**LACTATE**

- **Graph:**
  - X-axis: Time (h) [0, 5, 24]
  - Y-axis: Lactate (mM)
  - Significant changes noted at 5 hours.

**Recovering ~5 h after acute stress**
EXPERIMENTS ABOARD A FISHING VESSEL
(local longline gear “voracera”)

A

STOP

B

Vessel in motion

C

Vessel in motion

D

STOP

E

Vessel in motion

Time of the fish being hooked:
~10 minutes
EXPERIMENTS ABOARD A FISHING VESSEL
(Survival rates)

N = 102 fish
(29.4 ± 0.2 cm)
From 12 fishing hauls

Each haul was divided into 2 tanks of 2000 L just after capture

Survival was calculated after 5 h recovery

Survival 90.6 ± 6.2 %

But, were survivors recovered?
EXPERIMENTS ABOARD A FISHING VESSEL
(Physiological recovery)

N = 36 fish
From 7 fishing hauls

Blood was collected.
Fish were individually labelled.
Recovery in 2000-L tanks.

Blood was collected again 5 h after recovery
EXPERIMENTS ABOARD A FISHING VESSEL
(Physiological recovery - Results)

CORTISOL

LACTATE

Recovering ~5 h after acute stress
CONCLUSIONS
CONCLUSIONS

1.- Blackspot seabream (*Pagellus bogaraveo*) below 33 cm length, captured in the Strait of Gibraltar by the local longline gear called “voracera”, shows SURVIVAL RATES of 90.6 ± 6.2 %

2.- Surviving fish managed to RECOVER their PHYSIOLOGICAL homeostasis between 5 to 24 h after capture.

3.- More studies are necessary to evaluate survival rates along the year, as well as to analyze their recovery behavior after capture.
Thank you!!!