Thalassia Salentina
Thalassia Sal. 40 (2018), 3-8
ISSN 0563-3745, e-ISSN 1591-0725
DOI 10.1285/i15910725v40p3
http: siba-ese.unisalento.it - © 2018 Università del Salento

IGOR AGOSTINI[1], LUIGI PURETTI[2]

[1] Università del Salento
igor.agostini@unisalento.it
[2] FIPSAS (Federazione Italiana Pesca Sportiva e Attività Subacquee)
zubatac@hotmail.it

ANNOTATIONS ON THE *POST-MORTEM* DISAPPEARANCE OF THE YELLOW BLOTCH ON *EPINEPHELUS COSTAE* (STEINDACHNER, 1878)

RIASSUNTO

Questo studio ha per oggetto la scomparsa *post-mortem* della macchia gialla in *Epinephelus costae*.

Le conclusioni cui la letteratura scientifica era sino ad oggi pervenuta sono le seguenti: negli esemplari vivi, la comparsa e la scomparsa della macchia è un fenomeno reversibile; negli esemplari morti, la macchia tende generalmente a scomparire e, in ogni caso, tale scomparsa è un fenomeno irreversibile.

Questa nota ha per obiettivo la messa in discussione di questa *vulgata* attraverso il resoconto di due esperienze, relative a due esemplari, uno pescato a Gallipoli, uno ad Otranto, in cui è attestata la reversibilità *post-mortem* della macchia: in entrambi gli esemplari, la macchia, assente dopo il decesso del pesce, è, nel giro di poche ore, successivamente riapparsa, per poi scomparire definitivamente; nel secondo, in particolare, è stato possibile studiare in maniera più completa la variazione diacronica, osservando, in sequenza, anzitutto l'assenza della macchia sul pesce sia sott'acqua, prima della cattura, sia fuori dall'acqua, per due ore dopo il decesso, poi la ricomparsa della stessa e, infine, dopo qualche ora, la sua definitiva scomparsa.

I risultati che qui si presentano sono ispirati alla metodologia della *Local Ecological Knowledge* (LEK) e si valgono, in particolare, del supporto dell'apnea: il campione italiano di pesca in apnea Luigi Puretti, coautore dell'articolo, ha osservato le variazioni in vita e *post-mortem* della macchia nel secondo dei suddetti esemplari.

SUMMARY

This article deals with the question of the alleged *post-mortem* disappearance of the yellow blotch in *E. costae* (Steindachner, 1878).

So far, scientific literature has paid attention on two points: a) in live specimens, the presence of the blotch is a reversible phenomenon; b) on the contrary, in dead specimens, the blotch disappears.

This article debates such *vulgata* arguing that: 1) the presence of the blotch is a reversible phenomenon not only in live specimens, but also in dead ones; 2) the blotch can appear *post-portem* also in specimens which did not present the blotch when alive in the sea.

These two conclusions have been inferred by the diachronic observation of the variation of the yellow blotch in two dead specimens of *E. costae*. The adopted methodology is based on Local Ecological Knowledge (LEK).

INTRODUCTION

In the reference book on groupers, *Groupers of the World*, it is written concerning *E. costae* (Steindachner, 1878): "Juveniles less than 15 cm standard length with 3 to 5 narrow dark stripes (possibly blue in life) paralleling lateral line on dorsal part of body: 2 stripes above and 1 to 3 stripes below lateral line. Two dark lines on head: one from lower edge of eye to ventral rear edge of inter-opercle, the second from dark maxillary streak to lower edge of preopercle. Adults brown or greyish brown, often with a large, distinct golden yellow blotch (vaguely defined at periphery) on body below spinous dorsal fin" (Heemstra and Randall, 1993: 135).

Here, the reference book describes the existence of an intraspecific chromatic diachronic variation: specimens presenting horizontal stripes on the dorsal part and specimens presenting a large yellow blotch do not form two distinct species, but, respectively, young and adult specimens of the same species. The idea is that a variation takes place here: the stripes of young specimens are succeeded by the yellow blotch of the adults. The discovery of this variation lead the biologists to accept unification under the name *E. costae* of phenotypes which in the past had been classified under different species because of the ignorance of such diachronic variations within the same species.

Pietro Doderlein's (1809-1895) monumental study of 1882 was decisive for this unification. In his work, the Dalmatian researcher connected the three presumed species of *Cerna costae* (Steindachner), *Serranus alexandrinus* (Cuvier-Valenciennes) and *Cerna chrysotaenia* with the three development phases of one single species. *Cerna costae* and *Serranus alexandrinus*

are chromatically characterized by more or less developed horizontal stripes; *Cerna chrysotaenia* is characterized by a yellow blotch (Doderlein, 1882).

Nevertheless, the phenomenon of the yellow blotch remained unexplored until two Italian scholars, Giorgio Bini and, then, Menico Torchio intervened on the matter (Bini, 1960; Torchio, 1963). After that, as far as we know (Agostini, 2018), no more contributions have been registered.

A consideration of the results of all the studies achieved so far shows that the chromatic variability is to be placed at these levels:

1) in live specimens, at a diachronic level;
2) in live specimens, at a synchronic level;
3) in dead specimens.

With reference to these three levels, it is certain that:

1. The adults of this species often have a yellow blotch which can be observed in fish of a minimum length of 35 cm. This blotch takes the place of (or overlies) the horizontal stripes, more or less visible, which are typical of young specimens (Torchio, 1963 identifies the minimum size, i.e. 35 cm. He completes the conclusions reached by Bini, 1960, who had observed the golden blotch only starting from specimens 66.5 cm long. No indications at all on this in Heemstra and Randall, 1993).

2. The color of this fish changes underwater and, specifically, the horizontal stripes turn into a yellow blotch, and conversely, the yellow blotch turns into stripes in a few minutes (See Torchio, 1963: 4-6. All apnea fishermen interviewed confirmed me that. The rules of this variation, however, are still unknown).

3. The blotch tends to disappear *post mortem* (See Torchio, 1963: 4 and 6).

Now, the state of the science is limited to this and there are, as far as we know, no contemporary studies which raise any relevant questions.

One crucial question concerns live specimens, and more precisely, the presence of the yellow blotch in adult specimens. The entry «*Epinephelus costae*» in Fishbase (http://www.fishbase.org/) is categorical: "Adults brown or greyish brown; distinct yellow blotch on body below the spinous dorsal fin". In Heemstra and Randall (1993), one finds a more correct statement concerning adult specimens.: "[…] often with a large, distinct golden yellow blotch" (p. 135); "[…] often have a large golden yellow blotch" (p. 136). We think that this phrase, i.e. "often", refers to the fact that not all adult specimens present the yellow blotch. Heemstra and Randall (1993) do not inquire into this fact in any detail, but here lies the origin of the popular distinction between two types of *Epinephelus costae*, which in Salento are called *Dòttu*, one with the yellow blotch, the other without blotch: *Dòttu* and *Dòttu mericanu* (Agostini, 2018). This distinction, which Bini did not consider as a proof of a specific difference, has a long history among the local fishermen, and it is still known by the most experienced ones among them. In our opinion,

this may suggest, as pointed out elsewhere (Agostini, 2018), the possibility of an infraspecific variety, but we intend to discuss this hypothesis on another occasion.

In these notes, however, we want to deal with a related question, concerning the alleged *post-mortem* disappearance of the yellow blotch.

In the article quoted above, Torchio (1963) establishes this distinction: in live specimens, the presence of the blotch is a reversible phenomenon; on the contrary, in dead specimens, the blotch disappears. This thesis is now confirmed by the most recent scientific literature (see also the entry «*Epinephelus costae*» in "Marine Species Identification Portal" [http://species-identification.org/]: "Large specimens with a large golden blotch on side which disappears quickly after death").

The purpose of the present note is to debate such *vulgata*.

MATERIAL AND METHODS

This study is based on the diachronic observation of the variation of the yellow blotch in two dead specimens of *E. costae*. The methodology is based on Local Ecological Knowledge (LEK): for one of the specimen, we have studied the diachronic variation, from the time when the exemplar was still alive in the water, before it was captured, until a few hours after its death.

RESULTS

In what follows, we argue that the presence of the yellow blotch in *E. costae* is a reversible phenomenon also in dead specimens.

We will report two cases in which the *post-mortem* reversibility of the blotch is attested.

The first case observed is a specimen of *E. costae* weighing about 3 kg: it was caught off Gallipoli (Salento coast of Gulf of Taranto, North Ionian Sea, Mediterranean). This specimen, caught early in the morning and sold a few hours later the same morning, was uniformly dark, and maintained the same appearance for hours afterwards. In the evening, however, a yellow area, even if not very clear, appeared on the top of the specimen (which at that moment was being scaled).

We did not think at first this phenomenon was very significant - maybe because the blotch was not too clear: we thought that we had simply inattentively observed the specimen at the moment of the purchase. This was our idea until one year later we studied a specimen of *E. costae*, about 3 kg and a half, which Luigi Puretti chased near Otranto. Underwater, the color

of this specimen was totally dark, and so it appeared immediately after the catch and in the first two hours after its death. However, two hours after the death of the specimen, the blotch became much clearer, and a yellow blotch appeared "very clearly" on the top. Then, after a few hours, the blotch disappeared, and the fish's original color reappeared.

DISCUSSION AND CONCLUSIONS

We think that these two phenomena prove sufficiently the merit of conducting a serious study on a greater number of specimens. Thereby, it will be possible to substantiate the hypothesis which we can advance here in the following terms: 1) the presence of the yellow blotch in *E. costae* is a reversible phenomenon not only in live specimens, but also in dead ones; 2) the blotch can appear *post-portem* also in specimens which, when alive in the sea, did not present the blotch.

REFERENCES

Agostini, I., 2018 - Nomenclature dialettali delle specie dei generi *Epinephelus*, *Mycteroperca*, *Polyprion* nel mare del Salento. *Palaver* **7** (n.s.): 117-204.

Bini, G., 1960 - Sull'identità della *Cerna chrysotaenia* Doderlein. *Bollettino di pesca, piscicoltura e idrobiologia* **36** (= 15 n.s.): 225-236.

Doderlein, P., 1882 - Riviste del genere *Epinephelus* o *Cerna Bp*. riscontrate sin'ora nei mari della Sicilia. *Giornale di Scienze Naturali ed Economiche di Palermo* **15**: 1-96.

Heemstra, P.C., Randall, J.E., 1993 - *Groupers of the World (family Serranidae, subfamily Epinephelinae): an Annotated and Illustrated Catalogue of the Grouper, Rockcod, Hind, Coral Grouper and Lyretail Species known to date*. Food and Agriculture Organization of the United Nations, Rome, 1993: VIII + 383 pp.

Torchio, M., 1963 - Sulla mutabilità della colorazione in *Epinephelus alexandrinus* (Cuv. Val.) 1828 (Osteichtyes Serranidae). *Rivista di Scienze Naturali. Natura* **54**: 1-7.