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Short note/Kurze Mitteilung

Distinctive individual marks in Red Sea wrasses (Labridae)

Individuelle Erkennungsmerkmale bei Rotmeer-Lippfischen (Labridae)

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Zusammenfassung: Digitale Unterwasser-Fotos von Lippfischen aus dem Roten Meer belegen gut sichtbare individuelle Zeichnungsmuster vor allem im Kopfbereich von *Cheilinus lunulatus* (ein gelbes Zeichen am oberen Kiemendeckel), *Cheilinus abujubbe* (radiäre Augenstreifen) und *Thalassoma rueppellii* (grüne Kopfstreifen). Laminierte Porträts dieser Indivduen können bei späteren Tauchgängen mitgeführt werden und erlauben eine eindeutige Identifizierung, die z.B Verhaltensstudien dieser revierbildenden und in Harems lebenden Fische erleichtern könnte.

During field observations of some labrid fishes in the Red Sea (Moosleitner 2008, 2011) I noticed that several wrass species did not only show more or less variable colour patterns, but also showed distinct patterns on their heads easily to recognize in the field. These distinctive patterns allow a doubtless identification of individuals without capturing and tagging them, which procedures are often a dificult task and may be harmful for the specimens.

In the present note I document these *patterns for three species (Cheilinus lunulatus, Cheilinus abudjubbe, Thalassoma rueppellii* identified after Goren & Dor 1994, Kuiter 2002 and Froese & Pauly 2013) by means of underwater photographs made largely in the field (see figs. 1-3). Specimens were photographed by a Nikon D3100 camera in an IKELITE waterproof housing. One individual of Ch. abudjubbe was photographed freshly caught by the author in a mobile aquarium at the shore of the Red Sea near Kosseir (Egypt) using the same camera but without housing (see fig. 2f). Photos were taken always from the left side, as the pattern of both sides differed slightly.

Then, the areas of interest seen on the photos were enlarged, provided on ID cards of each specimen and stored with successive numbers.

Cheilinus lunulatus (Forsskal, 1775)

This is the largest (to 50 cm TL) species included here. Juveniles and females show broad and narrow dark wavy bars on body and have a rounded caudal fin. Secondary males possess a green head with blue lips followed by a broad yellowish zone, a blue rear and a blue caudal fin with prolonged rays (fig. 1). Each (from 12 examined) specimens showed an individual yellow mark on dark background at the upper corner of the opercle . The marks ranged from a more or less straight, curved or angled to a hooked or even branched bar occasionally combined with one or more rounded dots (fig. 1) and may be completed by noting the position of the dots (behind, in front or under the bar etc.).

Cheilinus abudjubbe (Rüppell, 1835)

This is a somewhat smaller (30-40 cm) species than the previous one. (fig. 2). Individuals can be easily distinguished by the shape and arrangement of ten reddish (pink to red) and narrow radial lines around the eye. These lines are broadly underlayed by white or blueish bright stripes that vanish when the fish was put into an aquarium (fig. 2 f). For individual identification the radial lines of the left side were numbered clockwise from 1 to 10 be-

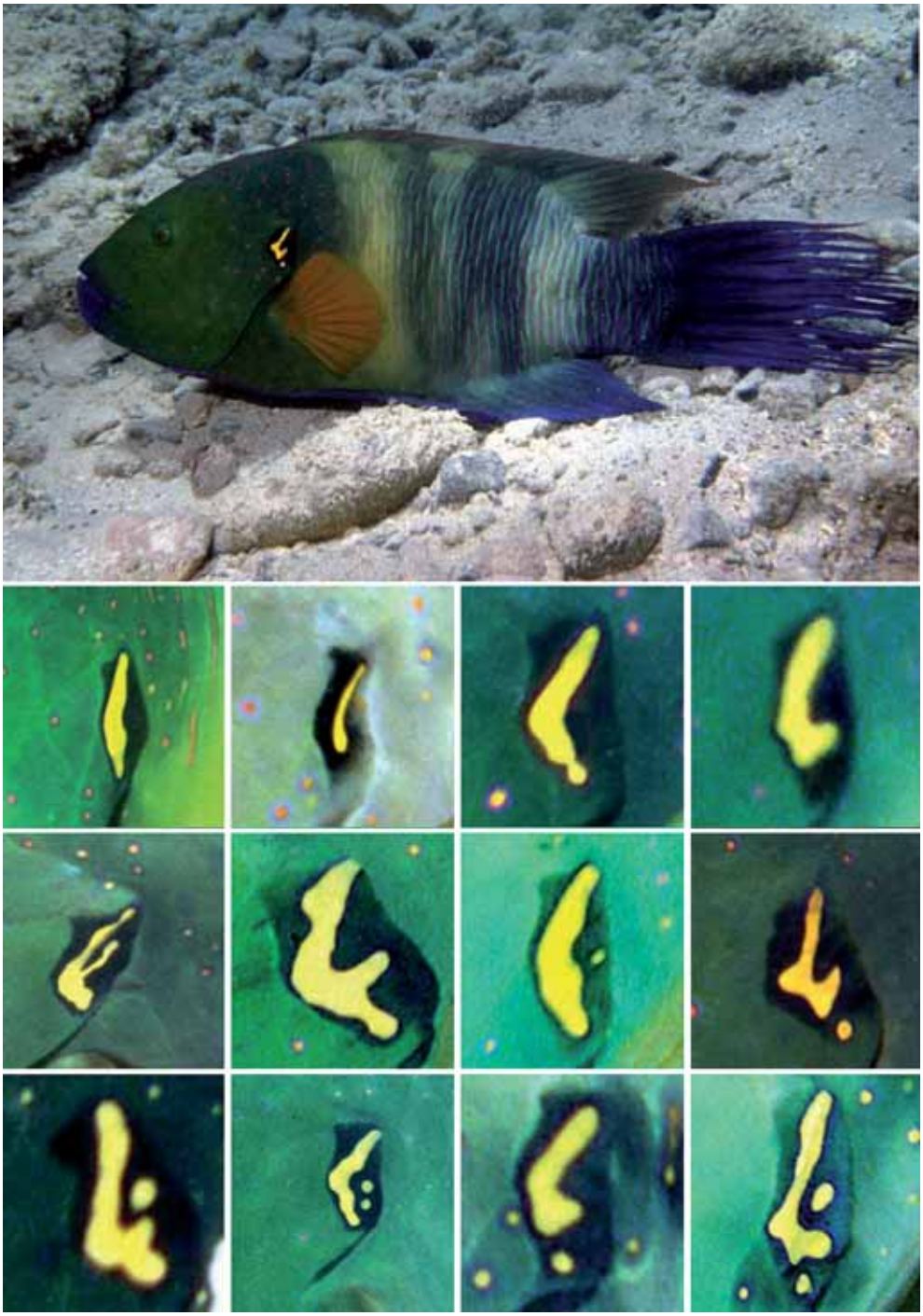

Fig. 1: *Cheilinus lunulatus.* Habitus of a male with a typical broom-tail (**on the top**) and twelve examples of distinctive yellow opercular marks always from the left side.
Abb. 1: *Cheilinus lunulatus.* Habitus eines Männchens mit typischem Besenschwanz (**oben**) und zwölf Beispiele individueller Kennzeichen am Kiemendeckel.

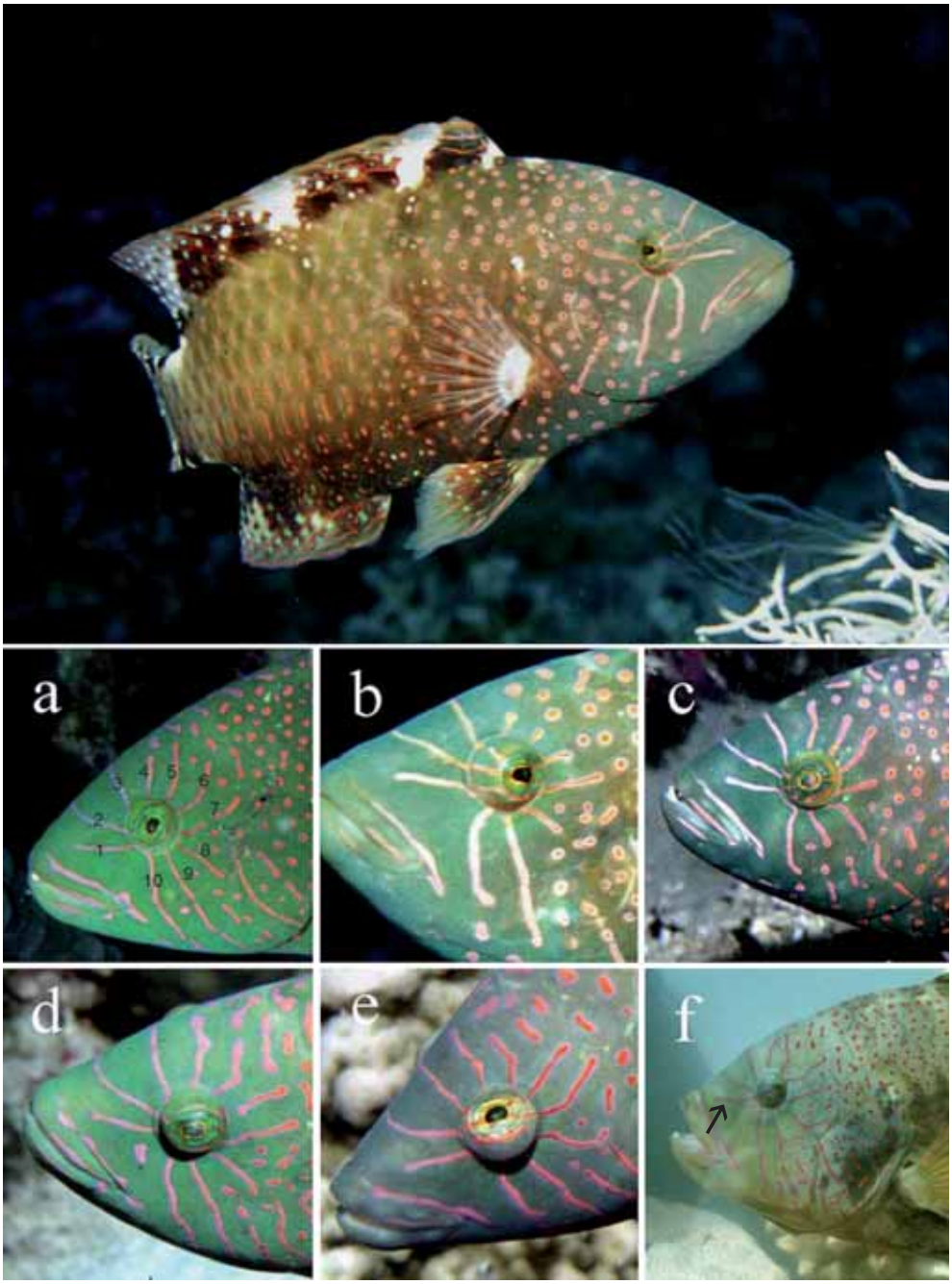

Fig. 2: *Cheilinus abudjubbe*. Habitus (**on the top**) and six examples (**a-f**) of an individual specific arrangement and appearance of the ten radial eyelines. In f (picture taken in the aquarium), the bright eyelines under the red ones (arrow) have vanished.

Abb. 2: *Cheilinus abudjubbe*. Habitus (**oben**) und sechs Beispiele (**a-f**) für die individuell unterschiedliche Anordnung und Ausbildung der zehn radialen Augenlinien. In f (Aufnahme im Aquarium) fehlen die leuchtend hellen Streifen unter den roten Linien (Pfeil).

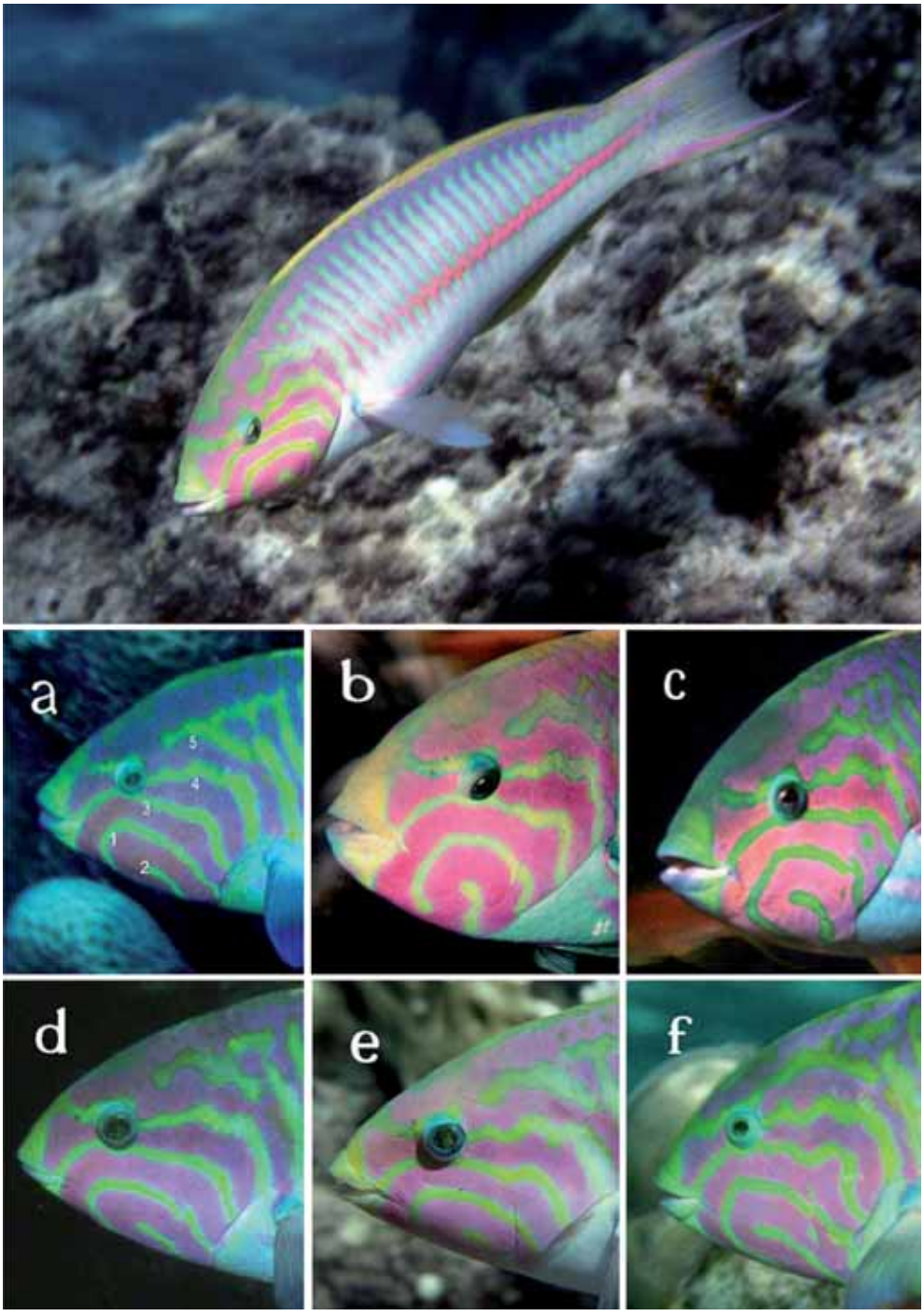

Fig. 3: *Thalassoma rueppellii*. Habitus (**on the top**) and the position of the five (see a) distinctive stripes on the head of six individuals (**a-f**).
Abb. 3: *Thalassoma rueppellii*. Habitus (**oben**) sowie die Anordnung von fünf (siehe a) Linien am Kopf bei sechs Individuen (**a-f**).

ginning with the short one running from the eye forwards in direction of the snout without reaching it (fig. 2 a). It may be continued by a narrow line along the lower edge of the eye to reach line 10 which stands in a wide angle to line 1. In the trapezoid space between these two lines a dot may be occasionally located. Lines 2 and 3 are quite similar in all specimens crossing the forehead and joining the corresponding stripes on the other side of the head. Lines 4, 5 and 6 may considerably differ in shape ranging from short and droplike to long and angled, or curved towards the nape. Short lines are often continued by dots and/or stripes. Line 7 is long running often quite straight backwards, but it may be also angled or divided into a stripe and a dot. Lines 8-10 run down obliquely and are of variable shape and length. Sometimes there are additional dots and/or lines between their distal parts. Line 10 goes downwards to a short distance behind the corner of the mouth. There are many more dots and lines behind and above those used here for differentiation and one very special stripe along the maxilla. Some of them may be included into the individual descriptions if necessary.

Thalassoma rueppellii (Klunzinger, 1871) (syn. *T. klunzingeri*)

The distinction of individuals of Rueppell´s wrasse was less easy, because this small fish (length up to 20 cm) is very speedy and, thus, difficult to photograph. Further, the pattern (arched green bands on variously coloured background) usable for distinction is rather complex (fig. 3). Best to start the inspection with the green band (fig. 3 a: 1) that encircles about three quarters of the cheek leaving a gap at the lower edge of the gill cover and may be disconnected where passing the preopercular edge. It's shape may be ovoid, circular or approximately square and is divided in it's lower part by a curved green stripe that begins at the lower edge of the opercle and runs in direction of the mouth corner but it ends halfways (fig. 3 a: 2). A concentric band above the arch is running from the mouth's corner to and below the eye (fig. 3 a: 3) and curving down to the edge of the gill cover. A further green band (fig. 3 a: 4) extends from the green part of the snout to the dorsal edge of the eye and, very wavily, towards the edge of the operculum at level of pectoral base. A further wavy, and sometimes branching green band arises above the eye (fig. 3 a: 5), bends backwards, passes the opercular flap and continues vertically down the body. This bar is followed by many similar ones along the sides. Position and shape of the five lines, especially of 1 and parts of 4 and 5 behind the eye, allow a clear identification of individuals.

The above description reveals that wrasses may be individually identified by distinctive and easily observable markers on the head. Distinction of individuals may be further improved by noting even more specific traits than described herein. When diving, researchers may carry waterproof-laminated portraits of previously photographed specimens to study their behaviour and living together in territorial haremic groups etc. over a longer period.

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