The predator's new clothes: juvenile *Plectropomus maculatus*, a mimic of *Scolopsis monogramma*

Fig. 1 **a** A juvenile *Plectropomus maculatus* (white arrow) mimics *Scolopsis monogramma* (black arrow) in the Great Keppel Islands, Great Barrier Reefs. **b** *Scolopsis monogramma* has a distinctive black stripe from snout to tail (Photo by Dr. JP Chen), which is also observed in small juvenile coral trout (3 cm TL; **c**) until a larger individual (15 cm TL; **d**)

Mimicry is a common strategy among coral reef fishes that use diverse morphological features and behaviors to avoid predators or to increase successful foraging. Juvenile coral trout (*Plectropomus* spp.) strongly rely on coral habitat for food, shelter, and nursery grounds (Wen et al. 2012) and have been hypothesized to mimic poisonous pufferfish. Coral trout *Plectropomus laevis*, *P. leopardus*, and *P. maculatus* are mimics of *Canthigaster valentini* and *Canthigaster papua* based on their color pattern, divergent diets, and “sculling” swimming behavior (Frisch 2006). These juvenile *Plectropomus* fishes might benefit by resembling the poisonous pufferfishes (Batesian mimicry) and by increased access to prey (aggressive mimicry). Here, we report another mimicry case of juvenile coral trout. *Plectropomus maculatus* resembles juvenile *Scolopsis monogramma*. Both inhabit shallow living *Acropora* coral in Great Keppel Islands, Great Barrier Reefs (Fig. 1a). We observed this juvenile *P. maculatus* with similar body colorations as *S. monogramma* (Fig. 1b), including a greenish-gray body color, a distinct black stripe from snout to tail. In addition, this mimicry of

coral trout also displays ontogenetic changes as in Frisch (2006), and the black stripe was much clearer at 3 cm TL then started to disappear at 15 cm TL (Fig. 1c, d). We hypothesized that this juvenile *P. maculatus* individual displays aggressive mimicry of *S. monogramma* as the latter's benthic crustacean diet allows their mimics to strike prey gobids and blenniids. Similar cases of aggressive mimic models were also recorded in Serranids, such as juvenile of *Anyperodon leucogrammicus* and *Halichoeres leucurus*, *Mycteroperca tigris* and *Thalassoma bifasciatum* (Randall, 2005). To our knowledge, this is the first report of juvenile *P. maculatus* mimicking *S. monogramma*; however, the actual mimetic relationship between these two species is still unclear. Further investigations of the behavior, relative abundance, and habitat preference of *P. maculatus* and *S. monogramma* are needed to verify these observations.

Acknowledgements We thank GP Jones who supported the fieldwork for CW when the photographs were taken.

Compliance with ethical standards

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

- Frisch AJ (2006) Are juvenile coral-trouts (*Plectropomus*) mimics of poisonous pufferfishes (*Canthigaster*) on coral reefs? *Mar Ecol-Evol Persp* 27:247–252
- Randall JE (2005) A review of mimicry in marine fishes. *Zool Stud* 44:299–328
- Wen CKC, Pratchett MS, Almany GR, Jones GP (2012) Patterns of recruitment and microhabitat associations for three predatory coral reef fishes on the southern Great Barrier Reef, Australia. *Coral Reefs* 32:389–398

K.-S. Chen
Fisheries Research Institute, Keelung, Taiwan

C. K.-C. Wen (✉)
Department of Life Science, Tunghai University, Taichung, Taiwan
e-mail: ckcwen@thu.edu.tw

Received: 4 September 2018 / Accepted: 20 October 2018 / Published online: 30 October 2018
© Springer-Verlag GmbH Germany, part of Springer Nature 2018

Coral Reefs (2018) 37:1241
<https://doi.org/10.1007/s00338-018-01746-9>