Foraging association of lionfish and moray eels in a Red Sea seagrass meadow

Fig. 1 Interspecific foraging association of the lionfish *Pterois volitans* with the moray eel *Gymnothorax griseus* in a Red Sea seagrass meadow. **a** Attendant association by an individual lionfish displaying its hunting posture (i.e., lowered head, flared pectoral fins) and a moray eel, **b** a group of three lionfish associated with a foraging moray eel, panel **c** two groups of lionfish–moray eel associations: In each group, two lionfish attend one moray eel

Interspecific foraging associations of fish occur as shoaling or attendant interactions and can generate important benefits such as increased prey availability and reduced predation risk for the involved fishes (Lukoschek and McCormick 2002). Key elements of an interspecific attendant foraging association are the nuclear species, initiating and maintaining foraging associations, and the associated species that follow the foraging nuclear species for varying periods of time. Further, certain interspecific attendant foraging associations are highly communicative and cooperative (Bshary et al. 2006). Here, we report on the attendant foraging association of the lionfish *Pterois volitans* with the moray eel *Gymnothorax griseus*, as observed in a shallow coastal seagrass meadow located in the Gulf of Aqaba, Red Sea, close to Dahab, Egypt. On six consecutive days (1–6 March 2013), individual *P. volitans* or groups of conspecifics (≤ 3) were observed in close association with individual *G. griseus* foraging between seagrass leaves during the afternoon (Fig. 1a, b). Associations were initiated when lionfish spotted moray eels from the water column, subsequently following them and then attending *G. griseus* forays, thereby displaying their species-specific hunting posture (i.e., lowered head, flared pectoral fins) (ESM 1). This close association was maintained for extended periods (>1 h), during which *G. griseus* hunted or rested, while *P. volitans* either scavenged on startled benthic prey organisms or remained on alert. Such interspecific groups were observed in close vicinity to each other (Fig. 1c) and occasionally merged to larger groups consisting of two *G. griseus* and up to four *P. volitans* (ESM 1). Based on our observations, we classify this attendant foraging association as the *following* and *scavenging* type (Ormond 1980), where *G. griseus* acts as a nuclear species and *P. volitans* as an attendant commensal. Potential specific benefits for both associated predators remain to be investigated.

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