

“We’re all individuals!”

How identifying individuals can shine new light on fish behaviour. Words and pictures by **Paul Naylor**.

Fish are often regarded as rather anonymous and characterless animals, but this changes when we get to know them. Recognizing individual fish provides valuable insights into their behaviour and excellent opportunities for education and public engagement.

Bold, inquisitive, impressively territorial and photogenic, the tompot blenny (*Parablennius gattorugine*) has the perfect characteristics for such observations. It is well known by the divers and snorkelers of northern Europe, who see it peeking out from rocky holes and crevices, but its biology and behaviour have received little attention.

My study of individual tompot blennies originated from realizing that the intricate pattern of markings on their scaleless skin created the exciting possibility of recognizing them and tracking their behaviour through photography.

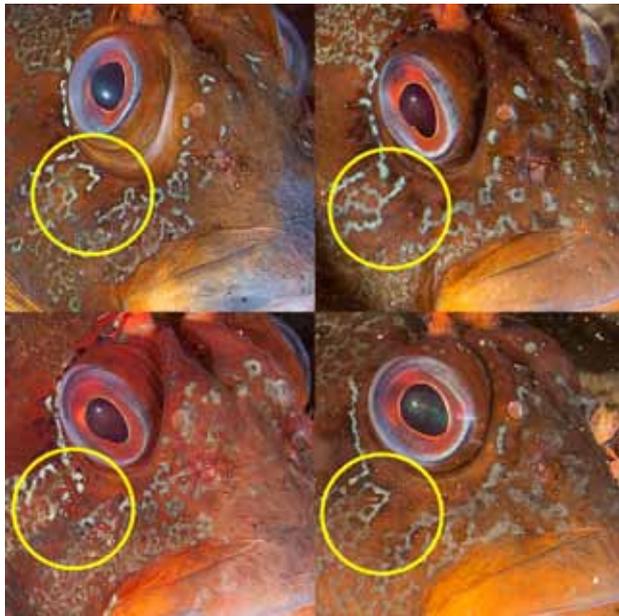


Figure 1: Distinctive markings on 4 tompot blennies. The angle from which photographs are taken varies with the blenny’s position in a crevice so markings close to a fixed reference point on its body (such as the eye) are most helpful.

Male tompot blennies guard crevice territories that the females visit to lay eggs. I initially used individual recognition to ascertain the length of time, previously unknown, over which these territories were held. As the recognition technique developed, visiting females could also be identified, and this enabled interpretation of other interactions. For example, blennies being chased away by male territory holders were not generally rival males (as might have been assumed) but were often females that had entered male residences to breed at other times. The gender of a tompot

blenny is difficult to determine in the wild unless a female is seen laying eggs or a male’s large anal glands are visible.

My early findings on male tompot blenny territory retention have been published with more to follow. Other fish in which recognition of individuals by their markings has enabled study of behaviour include rays, groupers and wrasse.

A Wildlife Trusts press release about the tompot blenny recognition paper prompted the Guardian and Daily Express to describe the tompot blenny as ‘the small fish with a big personality’, and ‘looking like a clown but nobody’s fool’. These articles, and others in local media, highlighted the surprisingly colourful nature of UK marine life and the vital importance of its protection. So, in addition to fascinating and perplexing us with its behaviour, the tompot blenny’s individuality makes it an excellent ambassador for the marine environment!

Video clips of tompot blenny (and other marine animal) behaviour can be viewed via: vimeo.com/paulnaylormarinephoto

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- Males retained the same crevice territory for up to three consecutive breeding seasons. They defended territories against rival males, sometimes receiving (then recovering from) fighting injuries.
- Up to two years before being observed guarding a territory, recognized males had ‘stand-offs’ with territorial males or resided temporarily in one of the territories.
- Recognized females were seen in the same area of reef over a period of up to three years and, while more mobile than males, favoured particular hiding places.
- Consistent with expected blenny behaviour, female tompot blennies made egg-laying visits to more than one male residence in a breeding season and males hosted more than one female visitor.
- More surprisingly, males occasionally hosted two females (three on one occasion) simultaneously.
- Unexpectedly, the same females that made visits to males in the breeding season approached males outside this period and then quickly retreated or were chased away by the males. These approaches often involved the female lying partially sideways in an apparently submissive posture in front of the male.
- The same females that made ‘submissive’ approaches to males appeared to elicit similar postures in smaller females and chased them away, suggestive of a hierarchy.

Further reading

Naylor P & Jacoby D M P (2016) Territoriality in the tompot blenny *Parablennius gattorugine* from photographic records. *Journal of Fish Biology* 88 (4) 1642-47

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Zabala M, Louisy P, Garcia-Rubies A & Gracia V (1997) Socio-behavioural context of reproduction in the Mediterranean dusky grouper *Ephinephelus marginatus* (Lowe, 1834) (Pisces, Serranidae) in the Medes Islands Marine Reserve (NW Mediterranean, Spain). *Sci Mar* 61(1) 79-89

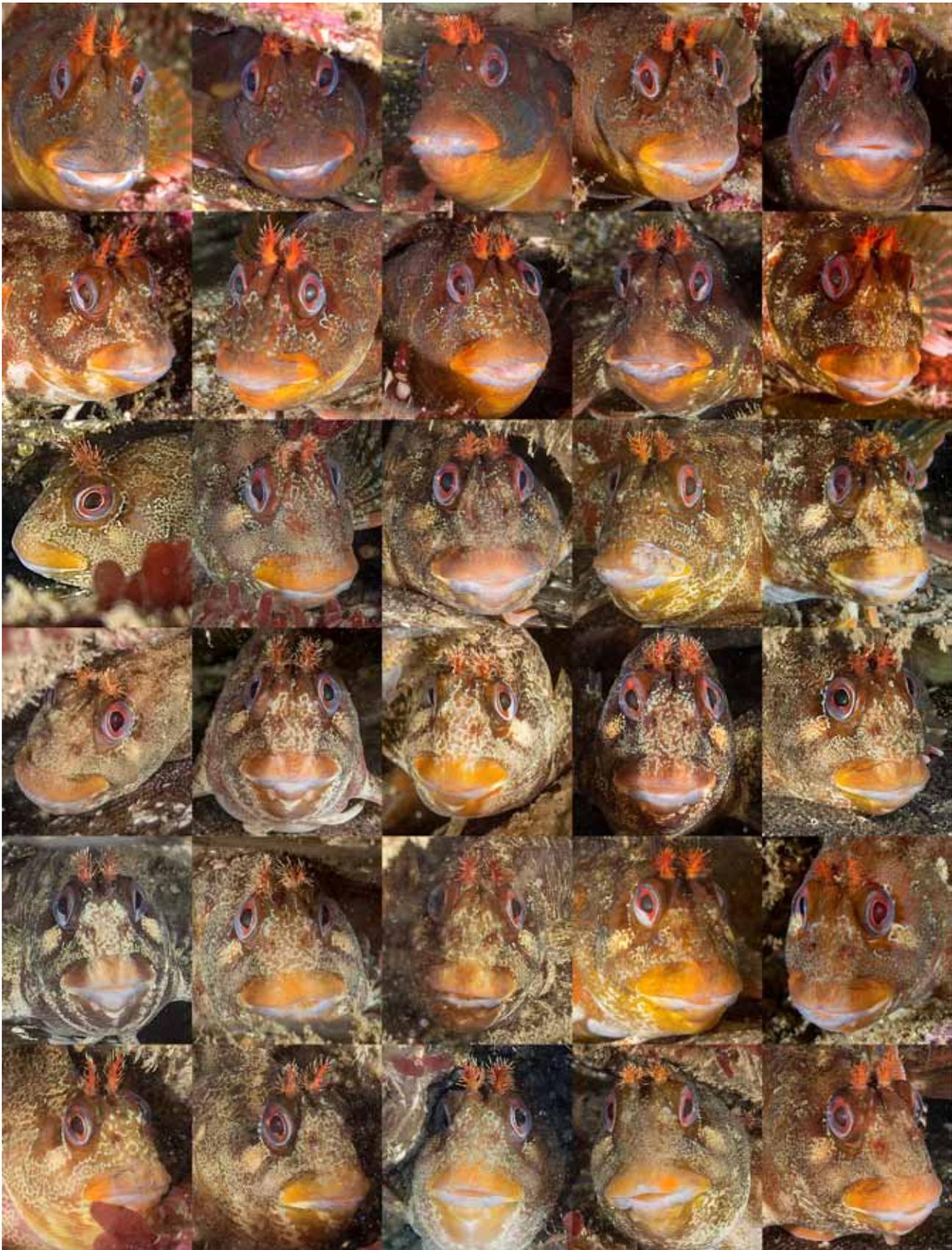


Figure 2: They're all individuals! The 10 male territory holders (top 2 rows) that were identified on a small, 15 m² area of Devon, UK reef between 2011 and 2016, along with 20 females (lower 4 rows) that visited the resident crevice of at least one male in the breeding season (March to June).