




A Spine-cheek Anemonefish *Premnas biaculeatus* snuggling among the tentacles of a Lightbulb sea anemone *Entacmaea quadricolor*, its exclusive host. Females of this species - as the one pictured - are much larger and less brightly colored than the males.

ADORABLE CLOWNS OF THE SEA

ANEMONE FISH

Everybody loves the cute and colorful clownfish, a tropical symbiont which finds safety among the deadly venomous tentacles of its host

A vibrant underwater scene in the Maldives. Two large, bulbous purple anemones with thick, wrinkled bodies and numerous long, yellowish-tan tentacles are attached to a rocky substrate. A small, bright orange Black-footed Anemonefish is nestled in the space between the two anemones. The surrounding water is clear and blue, with sunlight filtering through from the surface, creating a shimmering effect. The rocky base of the anemones is covered in various colorful corals and algae.

A Black-footed Anemonefish *Amphiprion nigripes* shelters between two large anemones in the Maldives. Notice the shallow, sunlit, current-swept environment which is typical of this genus and its symbiotic hosts.

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PHOTOS BY ANDREA & ANTONELLA FERRARI

we all know and love clownfish. Also commonly known as anemonefish - a name which suits them rather more aptly - these small and colorful reef denizens belong to the very important and large family of the *Pomacentridae*, numbering a grand total of more than 300 species and which they share with other very common, shallow-water fish such as damselfishes. Counting more than ten different species in Indo-Pacific waters, clownfish are widely regarded as easily approachable if a little pesky camera subjects and adorable (but presumably rather unwilling) aquarium guests. In fact, they're so pretty it's easy loving them to death (or to near extinction) as it almost happened several years ago when the commercial success of the Disney/Pixar animated movie *Finding Nemo* prompted hundreds of thousands of kids worldwide to beg for one - with the dire result that as many were cyanide- or net-fished out of the sea only to end up down toilet drains when the little brats and their unknowing parents found out that caring for them was not really as easy as expected.

In nature they're well known for being symbionts - living in relative harmony together with another completely different marine organism, both of them getting mutual benefits from the relationship. In this case, the other organism is quite unique - the deadly venomous sea anemone, a beautiful

and often gaudily colorful living carpet of toxic tentacles rising from a velvety, fleshy foot, closely related both to corals and to jellyfish. Every single sticky tentacle of this soft-bodied creature is quite capable of injecting a deadly dose of toxins in the body of the unfortunate organism touching it (that is how anemones get their food by the way) through a number of microscopic "needles" shooting on contact. Any creature living in the cuddly embrace of such a terrifying host would be quite safe from hungry predators - so how do clownfish avoid getting paralyzed and eaten by the anemone? It seems they just trick it in believing they're part of itself - gradually and daily wriggling among its tentacles with great care since they're very young, they absorb its "surface identity" in the layer of mucus which covers their bodies: after some time, the toxic tentacles of the anemone do not react anymore to the touch of the clownfish, since they do not recognize it as a potential prey item. Strip a clownfish of its protective layer of mucus however, and the little cunning fellow will be instantaneously paralyzed and eaten by the anemone like any other fish. No wonder the little pugnacious clownfish will rise up to an approaching diver's face, nibbling ferociously at noses, ears and probing fingers, bravely defending their turf at the slightest suggestion of encroachment! And yes - as funny as

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*Safely snuggling
in the deadly embrace
of its velvety host*

With its sharply banded black, white and bright orange livery, the Western Clown Anemonefish *Amphiprion ocellaris* is perhaps the epitome of this group of colorful, active fish. Hundreds of thousands of individuals belonging to this species are captured annually for the aquarium trade, often meeting a very uncertain future.

A Western Clown
Anemonefish *Amphiprion
ocellaris* wriggling among the
tentacles of its venomous host -
its rounded facial features
screaming cuteness
and cuddliness to most
first-time viewers.



it may sound, being nibbled by an angry clownfish defending its "investment" can occasionally be startling - it doesn't hurt, but it's definitely felt, even through gloved hands. On the other hand, we understand how clownfish profit by their lifelong association with anemones, but it's not really always clear what sort of advantage the anemone itself gets from its little hosts. It is true that they will strenuously defend it from intruders, but that would seem more a defense of their own territory than of the anemone itself, and anyway such a noxious creature is perfectly capable of defending itself (one can see hundreds of anemones on a reef without a single clownfish in them, and yet they're all perfectly healthy). And clownfish are not the only ones to take advantage of the anemones' toxicity, as the frequent presence of porcelain crabs and several species of shrimp on their mantle can readily attest.

SHOOTING THE CLOWN

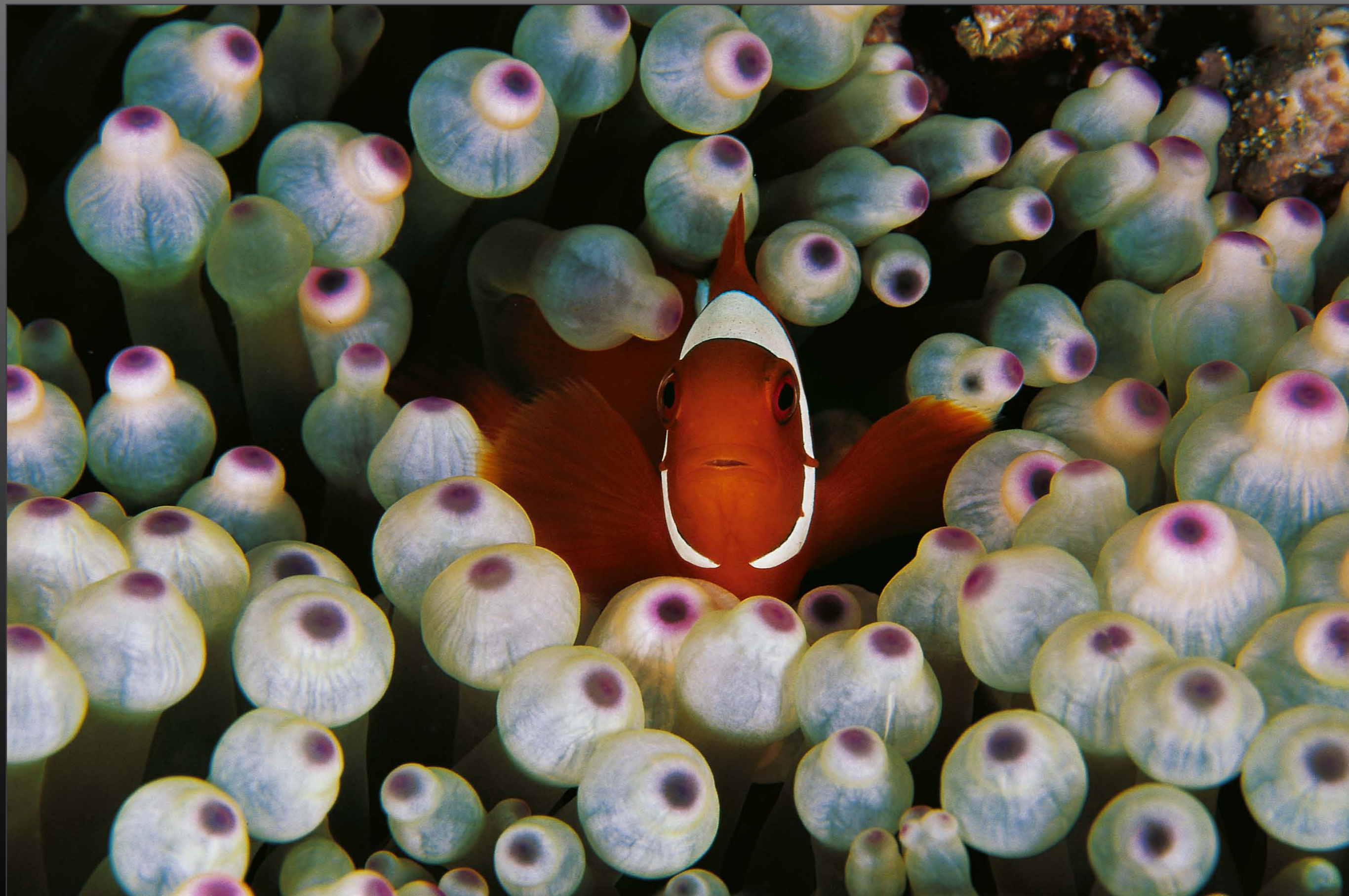
The technicolored show offered by a family of little clownfish comically wriggling inside a colorful anemone is just too typical of a reef scene to be ignored. They're commonly encountered in shallow, well-lit areas of the reef, often on coral rubble stretches which are subject to strong currents - in the spots offering their almost completely static anemone hosts the best feeding opportunities. As for clownfish themselves being good camera subjects, that's open to debate. They certainly look great but we find them quite obnoxious and generally hysterical, since they never stop swimming to and fro for a second, and trying to get a good snapshot of one is not the simplest of toils. In fact, one (very good and field tested) theory suggests to pre-focus where you'd like them most to be on their anemone's mantle - and then click when they enter it by pure chance. Sooner or later it must happen! ●

Tiny pugnacious lords of their own little turf in the reef world





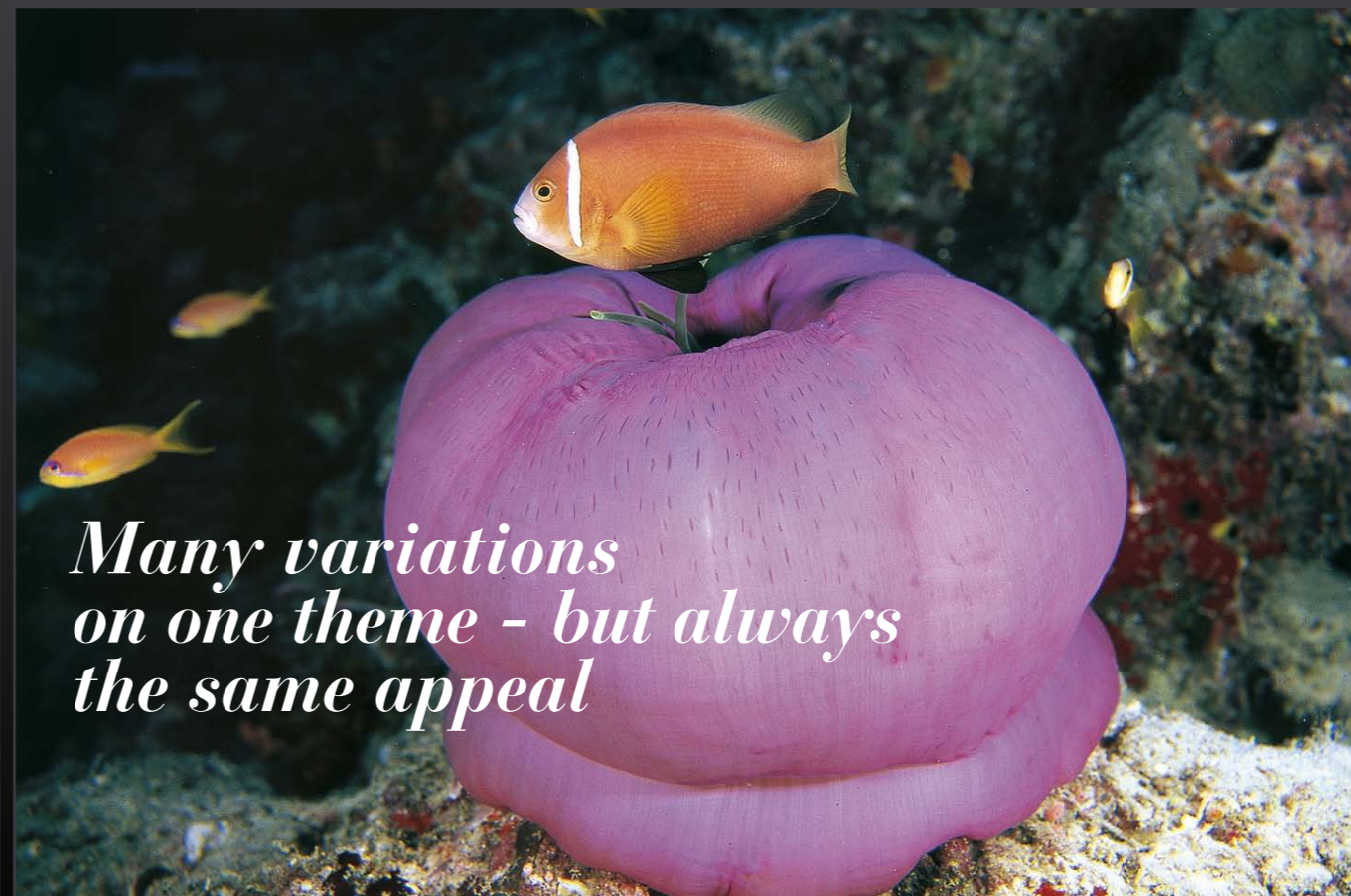
— The Bridled Anemonefish *Amphiprion frenatus* (far left) and the rather more delicately nuanced Pink Anemonefish *Amphiprion perideraion* (left) are commonly found on most Central and Western Indo-Pacific coral reefs. Notice the fleshy texture and chromatic variations shown by their anemone host.



— A small male Spine-cheek Anemonefish *Premnas biaculeatus* emerges from the psychedelic maze of the lightbulb-shaped tentacles of its exclusive host, the anemone *Entacmaea quadricolor*. No matter how small, all Anemonefish will always strenuously defend their territory and their host.

A gigantic colony of what appears to be a local yellow-tailed variety of *Amphiprion melanopus* covers an area of several square meters in shallow water. Raja Ampat, West Papua.





Clockwise: top left, male Spine-cheek Anemonefish *Premnas biaculeatus*, Central Indo-Pacific; left, Western Anemonefish *Amphiprion ocellaris*, Central Indo-Pacific; bottom, Black-footed Anemonefish *Amphiprion nigripes*, Indian Ocean, with its retracted anemone; bottom left, Panda Anemonefish *Amphiprion polymnus*, Central Indo-Pacific, the only species of this genus commonly observed on silty habitats, well away from coral reefs.

Many variations on one theme - but always the same appeal



A very large colony of Two-banded Anemonefish *Amphiprion bicinctus*. This is the only species of clownfish found in the Red Sea, where it can often be seen in colonies of several hundred individuals sheltering on "living carpets" made of closely-set sea anemones.

ANIMA MUNDI
ON **YouTube**

CLICK ON THE IMAGE AND WATCH A SHORT VIDEO ON THE LIFE AND HABITS OF CLOWNFISH IN THEIR CORAL REEF HABITAT

The Adorable Anemonefish





These Clark's Anemonefish *Amphiprion clarkii*, photographed in the Sulu Sea off the coast of Borneo, look somewhat less endearing than the average clownfish - is it the toothy scowl or the convict stripes? The cuteness factor inherent in all anemonefish belies in fact their severely pugnacious nature.

These stripes tell a message - don't trespass or you'll get it from us!



Reef life at its vibrant, dazzling, technicolored best - with the ubiquitous clownfish and their swaying sea anemone hosts playing an indispensable part in the picture, both visually and ecologically.