Golden Cup Coral

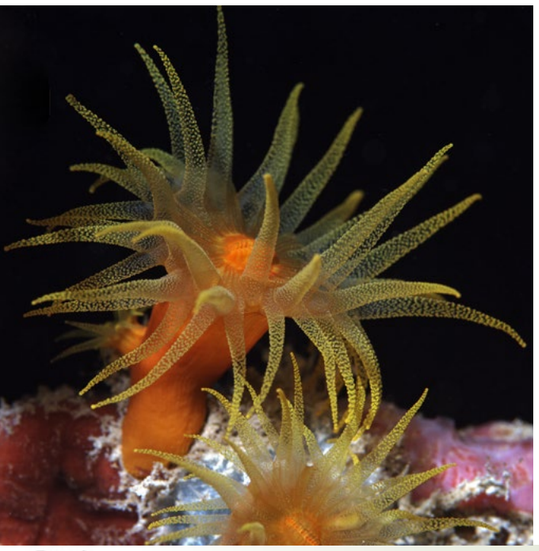
A Beautiful Alien

Golden cup coral, *Tubastraea coccinea*, also known as orange cup coral (right and below)

Text and photos by Lawson Wood

One of the most prevalent and photogenic invasive species in the Caribbean is the golden cup coral. Lawson Wood takes a closer look.

Since the opening of the Panama Canal in 1914, the entire Caribbean zone has been under even more threat from various invasive species, some pretty, some unseen and others downright dangerous to the vaga-



ries of this fragile ecosystem. With the second largest barrier reef in the world and a simply ridiculous amount of shipwrecks dating from the earliest explorers, including the Spanish Armada, accidental sinkings, tragic accidents, remnants from the World Wars and more modern, disused ships sunk as artificial reefs, the Caribbean is at the confluence of two major oceans and subsequently now open to influences from every part of our planet, principally through attachment to ships' hulls or plankton carried as water ballast.

As to the invasive marine life, one of the greatest (and prettiest) interlopers is the golden cup coral (*Tubastraea coccinea*), also known as orange cup coral. As a common resident in the Indo-Pacific region and the Coral Sea, it was first described at Bora Bora in French Polynesia by French naturalist René Primevère Lesson. It was also discovered in the Red Sea in the same year. At the opposite side of the greater Pacific Ocean, it was later found in

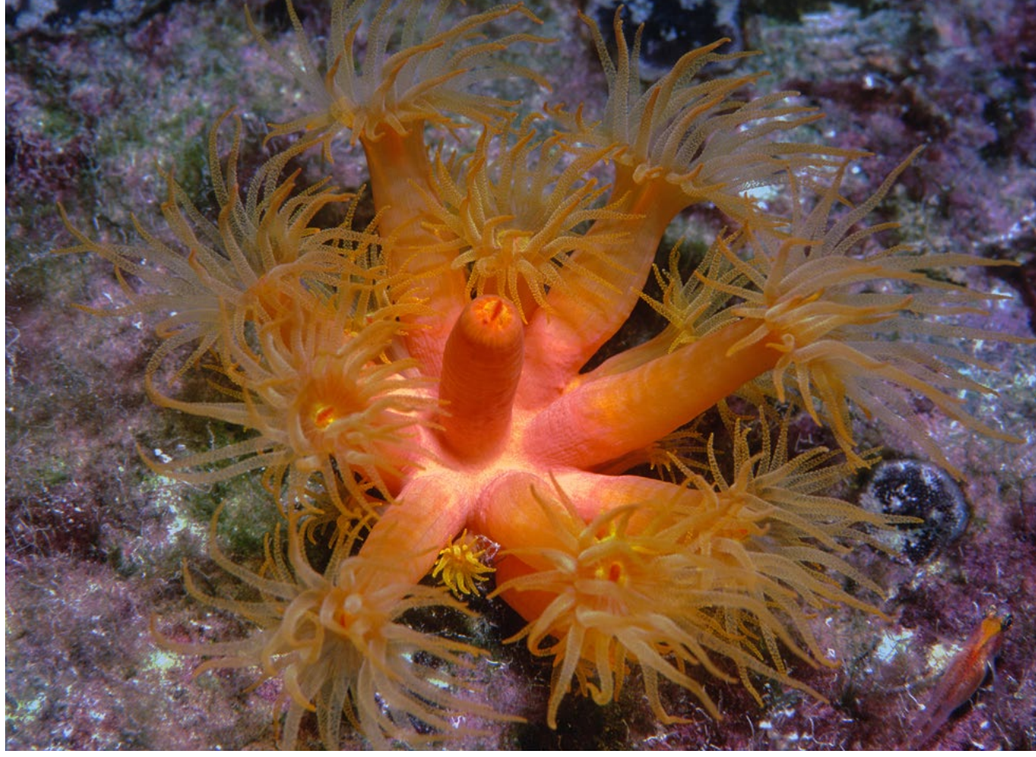
Tubastraea coccinnea with pipefish (above); *Tubastraea coccinnea* and *Tubastraea micranthus* cup corals together (top right)

Acapulco, Mexico, in 1866, seemingly transferred from attachment to ships' hulls.

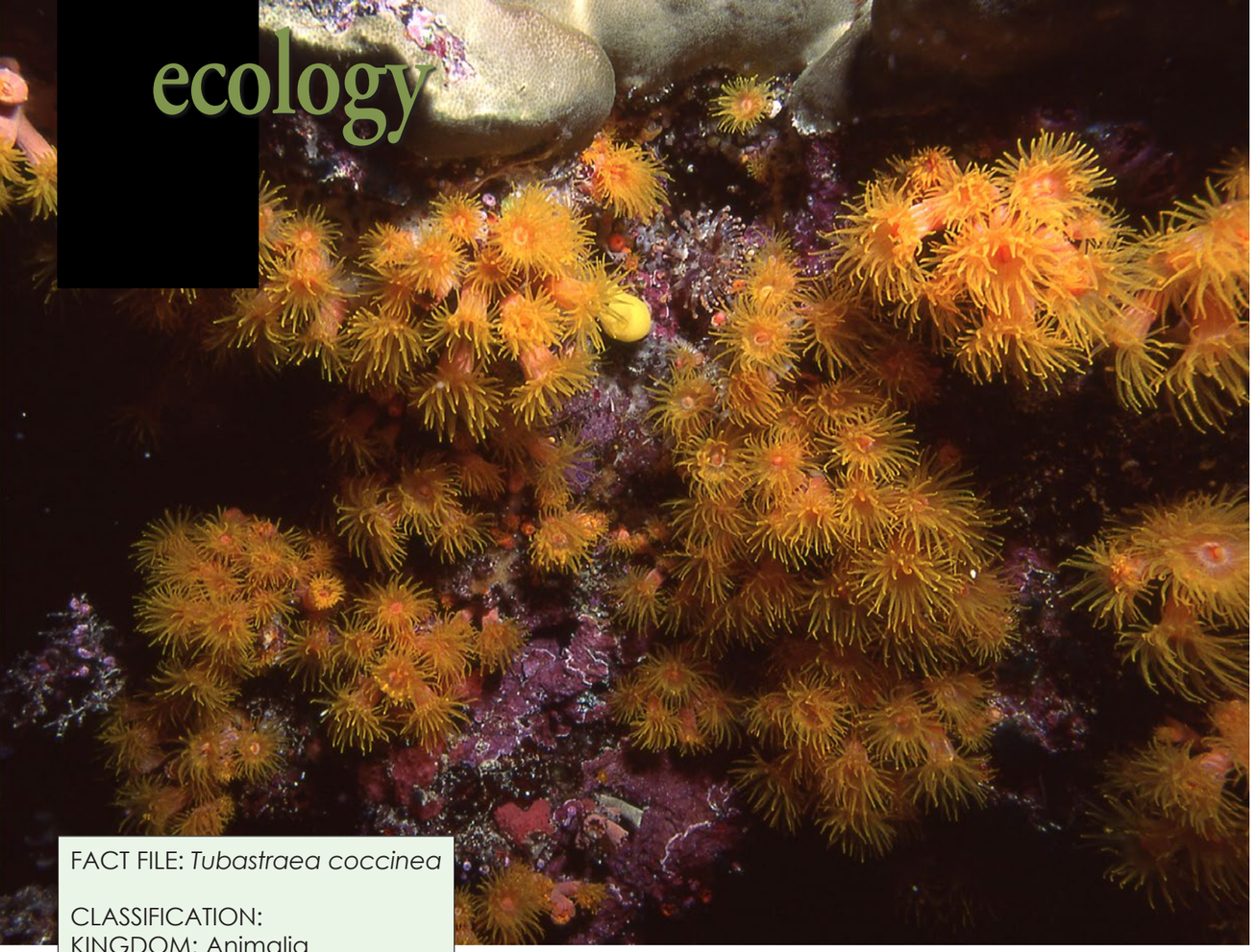
Expansion into the Caribbean

It is surmised as having finally entered the Caribbean (probably with the opening of the Panama Canal in 1914) and subsequently first recorded in Curaçao and Puerto Rico in 1943. From there, it was found in Jamaica, Cuba and the Cayman Islands by 1955. The eastward spread of this unassuming little golden coloured polyp continued, showing up in the Virgin Islands in 1970 and the Bahamas and Turks and Caicos in 1985. By 1999, it was prevalent in all areas of the Caribbean and the Gulf of Mexico, and was very evident in the Flower Gardens National Marine Sanctuary off Galveston, Texas.

It is still quite rare off northern Florida, except for the shipwrecks off the Florida Keys, and in particular the



Orange cup coral, *Tubastraea coccinea* (above and far left)



FACT FILE: *Tubastraea coccinea*

CLASSIFICATION:
KINGDOM: Animalia
PHYLUM: Cnidaria
SUBPHYLUM: Anthozoa
CLASS: Hexacorallia
ORDER: Scleractinia
SUBORDER: Refertina
FAMILY: Dendrophylliidae
GENUS: *Tubastraea*
SPECIES: *Tubastraea coccinea*
SOURCE: WORMS / MARINESPECIES.ORG

SYNONYMS:
Coenopsammia tenuilamellosa (Milne-Edwards & Haime, 1848)
Lobophyllia aurea (Quoy & Gaimard, 1833)
Tubastraea aurea (Zans, 1959)
Tubastraea tenuilamellosa (Boschma, 1951) ■
SOURCE: PANNEMO

Orange cup coral (*Tubastraea coccinea*)

Eagle and the *Duane* artificial reefs, which are almost covered by these coral polyps. It was first documented on these wrecks also in 1999, as well as Belize and Cozumel around the same time.

It is now prevalent in Brazil, the Canary Islands, Cape Verde and the coast of West Africa. Fairly recently, it has also appeared in Malta, where there is some competition with the golden zoanthid (*Parazoanthus axinellae*) and the golden star coral (*Astroides calycularis*), with which some identification may be confused. It is mainly found on artificial structures, such as piers, oil rig platforms and shipwrecks, but concerns are being raised that it is transitioning onto coral reefs, where competition is fierce for space, and it can have an adverse effect on local coral colonies.

Habitat and characteristics

It is more of a deeper water species and would appear to inhabit artificial structures, such as wrecks or piers, as opposed to coral reefs. It does not require sunlight for the photosynthesis of integral

INSTRUCTOR TRAINING
Program

Powered by: NAUI®

AVELO INSTRUCTOR | OCEANREEF® underwater, naturally.

Join us for an instructor-level training program that combines the Recreational Avelo Diver (RAD) Course, the Avelo Pro Course, and the Ocean Reef Full Face Mask (FFM) Instructor Course. This comprehensive experience includes confined water sessions, open water dives, and formal instructor evaluations. Upon completion, you'll be fully credentialed to teach both Avelo and Ocean Reef Full Face Mask courses.

SCHEDULE OF EVENTS

12 MAY — Recreational Avelo Diver (RAD) Course — 2 Avelo Open Water Dives
13 MAY — Avelo Diving Day — 4 Avelo Open Water Dives
14 MAY — Avelo Diving Day — 4 Avelo Open Water Dives
15-17 MAY — Avelo Pro Course — Open Water
18-19 MAY — Ocean Reef Full Face Mask Instructor Course — Confined Water

HOSTED BY
Captain Hook's Dive Center
29675 Overseas Highway
Big Pine Key, Florida, USA 33043

SCAN FOR MORE INFO

LIMITED SPOTS AVAILABLE

REGISTER TODAY

ecology

Orange cup coral on wreck (right) and on the *Eagle*, Islamorada, Florida Keys, USA (below)

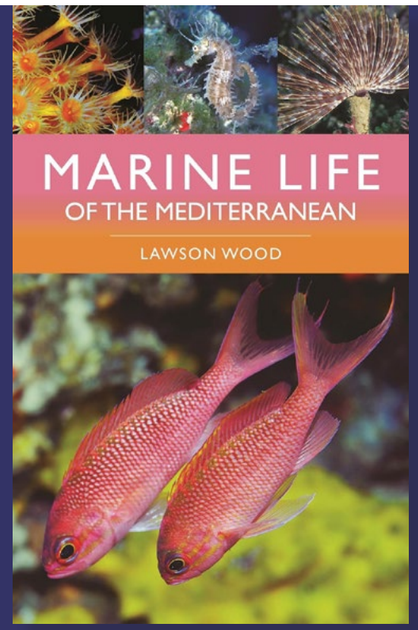
Orange cup coral on Theo's Wreck in the Bahamas (left) and on the *Superior Producer* wreck, Cuaracao (right); Lionfish, golden cup corals and diver on *Eagle* wreck (top far right)

algae. Rather, it prefers deeper waters and shaded areas, hence its prevalence on shipwrecks.

The golden cup coral is believed to be the only species of stony coral to have been introduced into the western and eastern Atlantic and the greater Caribbean. Growing to only 2cm (.75in) in height, its tentacles are a bright gold. Colonies form small clumps, around 14cm (5.5in) wide, in shaded areas, often in large congregations under overhanging reefs and shipwrecks. This is an azooxanthellate coral (lacking symbiotic algae), and the colouration is the coral's true colour. They extend their 3cm feeding polyps at night to feed on zooplankton.

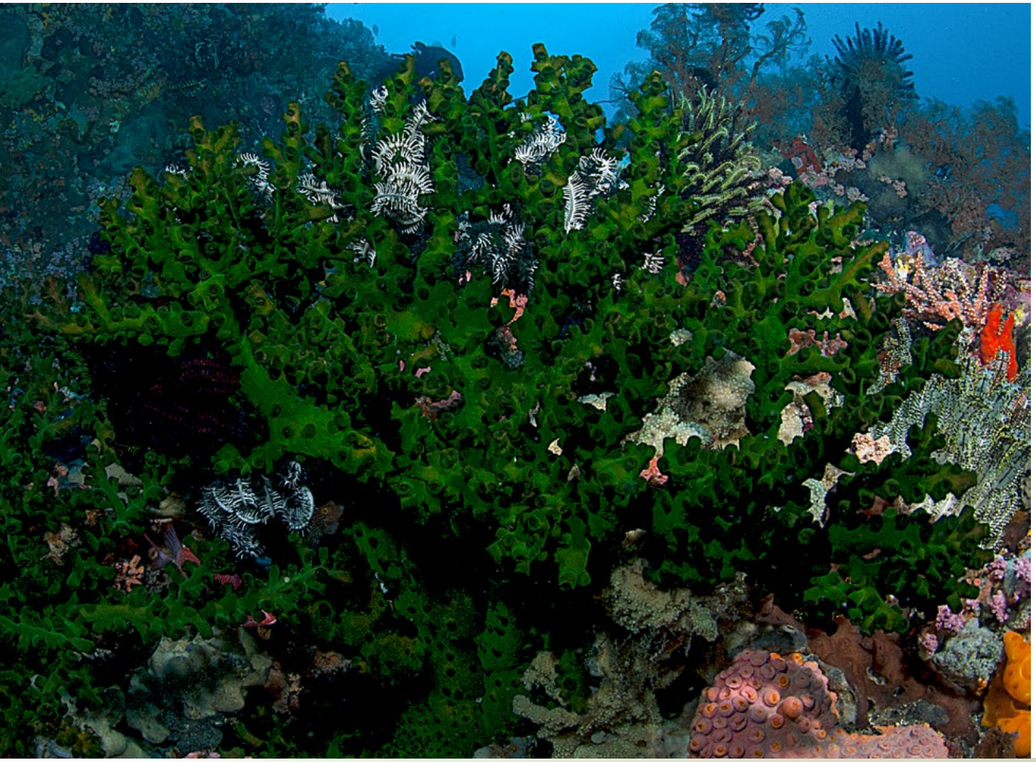
Whilst this species is clearly very invasive, there does not appear to be too much impact on the local reefs so far, but they can have an effect on some local corals and small anemone populations. However, they do make for some excellent and colourful photography.

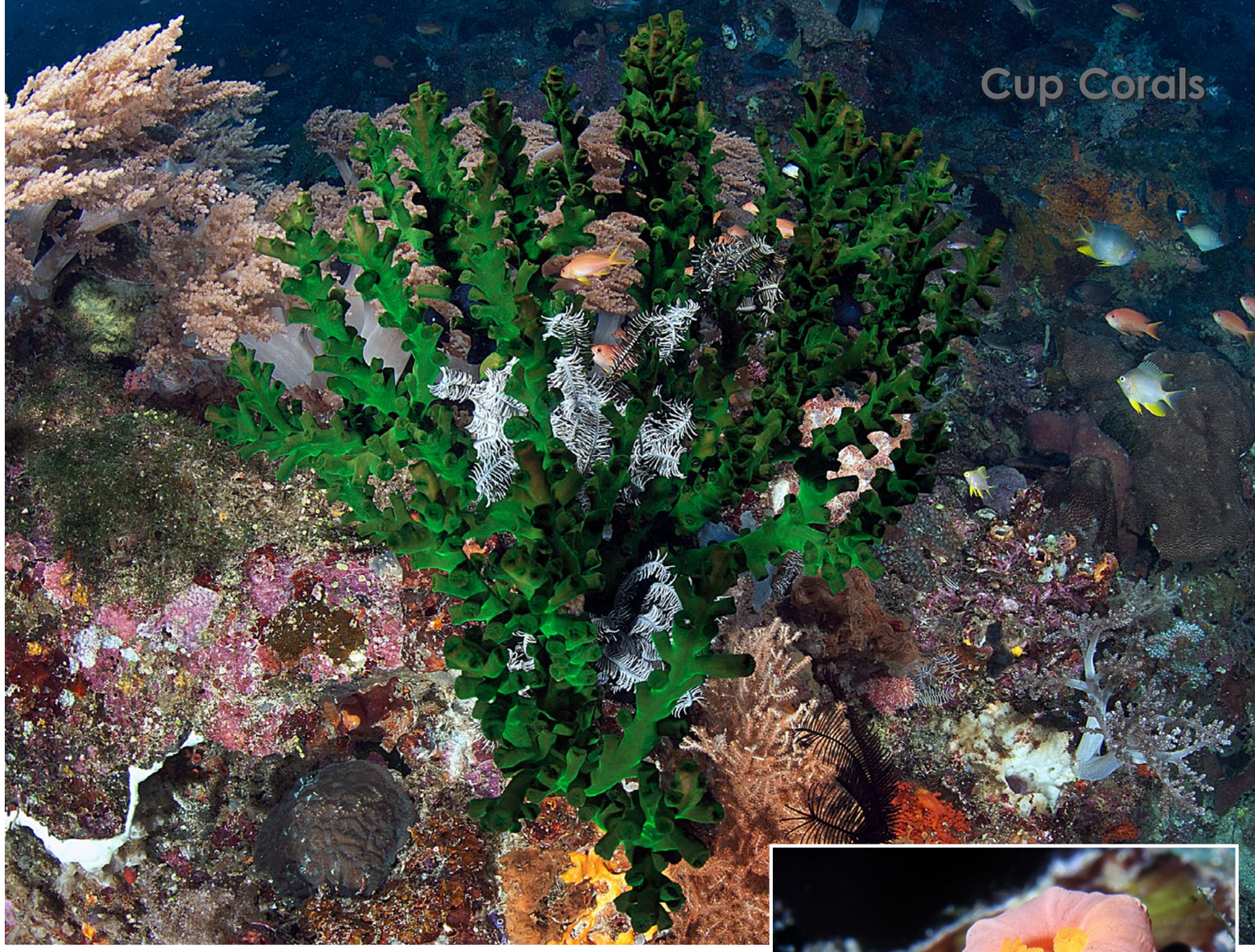
Other than the wrecks of the *Eagle* and the *Duane* in the Florida Keys, they can be found on Theo's Wreck in the Bahamas, the *Jado Trader* in Honduras, the *Superior Producer* in Curaçao, the *Lesleen M* in St. Lucia, the piers in Bonaire and St. Croix, the oil and gas



A new guidebook by Lawson Wood, featuring over 400 species of fish, corals and other vertebrates and invertebrates. Now available on Amazon.

Orange cup coral, *Tubastraea coccinea* (below); Midnight cup coral tree, *Tubastraea micranthus*, also known as black sun coral (right and bottom left); Small-toothed cowry with cup coral polyp (bottom right)





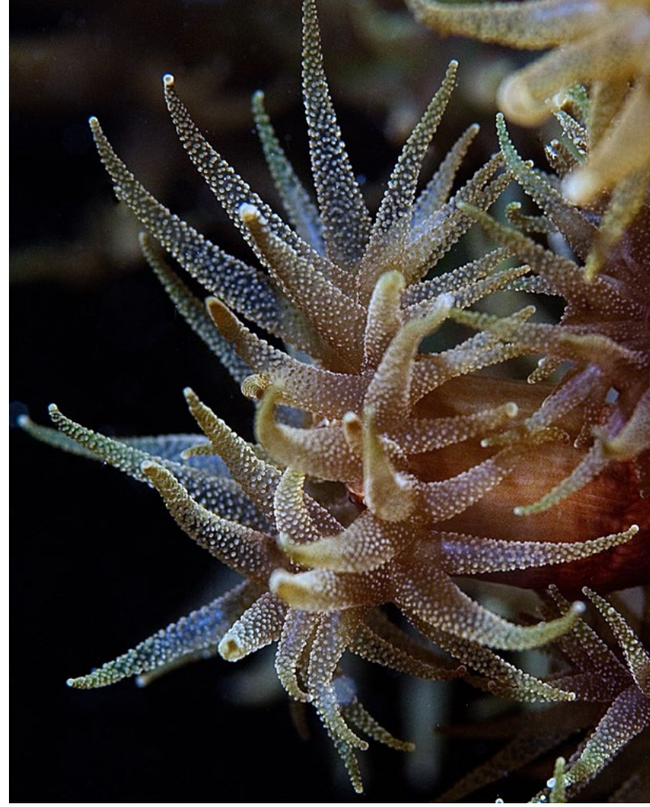
platform legs in the Flower Gardens National Marine Sanctuary, the RMS *Rhone* in the British Virgin Islands and just about everywhere else in between!

Similar species

There is a similar species called the black sun coral (*Tubastrea micranthus*), which is quite prevalent in the Indo-Pacific, and I see it on most dives in the Red Sea, particularly up around Shag Rock and Abu Nuhas. It has so far only been found on one oil rig in the Gulf of Mexico, but it is quite common in all other locations. This is a shallower growing coral, usually from 6m (20ft), whereas *T. coccinea* prefers depths below 18m (60ft).

Reproduction, distribution and predators

These small corals reproduce asexually and are hermaphrodites, being able to release tiny larvae called planulae. These remain in the plankton soup for a couple of



Tubastraea eating nudibranch, *Phestilla melanobrachia* (above); Orange cup coral, *Tubastraea coccinea*, with geometric moray and hingeback shrimp (top centre); Closeup of a polyp of a midnight cup coral tree, *Tubastraea micranthus* (top right) and an orange cup coral, *Tubastraea coccinea* (right)

weeks or so and tend to stay within the immediate area of the parents. However, should the planulae be released into an area of strong currents, the dispersal figures from the Caribbean clearly indicate how robust these corals are.

Additionally, these corals also form "runners" that can extend over 10.4cm (4.1in) per year, looking for a desirable habitat. Once they have reached that sweet spot, small polyps develop at the end of each runner. Water temperature is a factor in their acceptable distribution, as they can survive in 15°C, but will perish if the water temperature drops below this point. However, it has managed to get to the Canary Islands and Cape Verde (although there is some speculation about this location, as an almost identical species is also found there).

They have few natural enemies, apart from some parrotfish, which munch on most types of coral polyps. I have also found a nudibranch in the Red Sea called the *Tubastrea* eating nudibranch (*Phestilla melanobrachia*).

Final thoughts

Golden cup coral is easy to find and recognise. These beautiful little coral polyp clumps may be alien invaders, but they really brighten up a dive and make great photographic subjects. ■

Lawson Wood is a widely published underwater photographer and author of many dive guides and books. Visit: ***instagram.com/lawsonwoodmarinephotography***

SOURCES: PANNEMO, WIKIPEDIA, MARINESPECIES.ORG, FISHBASE