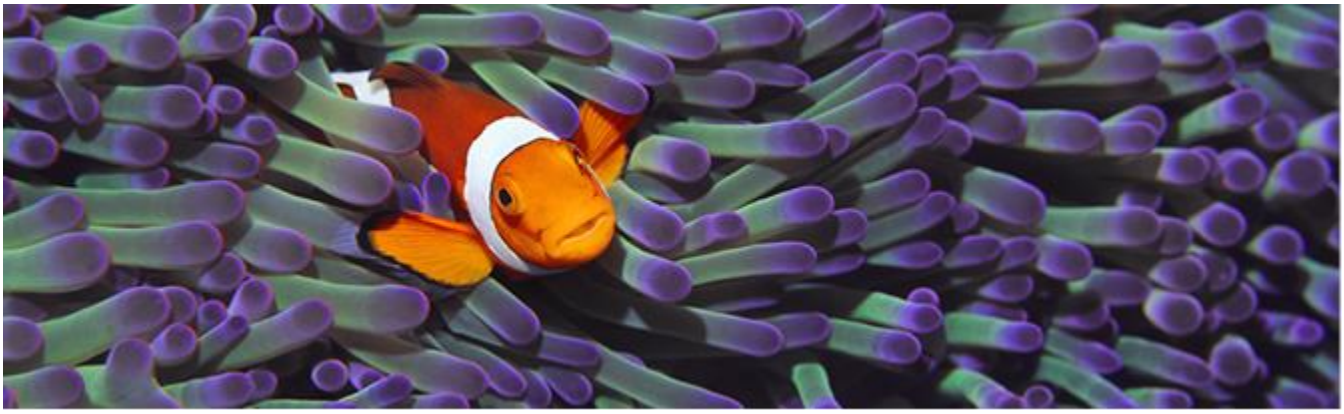
AquaCalculator Reef Aquarium Compendium - Part 5

Host anemones in marine aquariums

Anemones are beautiful creatures and the hosts for anemone fish that "snuggle" inside them.



Before the acquisition you should inform yourself about the keeping conditions!
Anemones are demanding creatures and require sufficiently large, well established and stable saltwater tanks. In addition, animals on sale are sometimes so weakened by transport or improper husbandry that they have little chance of survival.

Follow the recommendations of this FAQ and you have best chances to enjoy this wonder of nature soon at your home.

We wish you much success
(Martin Kuhn and the AquaCalculator team)

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Content

Liability exclusion

The information and recommendations made in this compendium
represent the state of knowledge at the time of the author of the last update.

No guarantee can be given for the topicality and correctness of the contents!
Any liability as a result of correct or incorrect application is rejected.

Symbolism

INFORMATION	Important note
WARNING	Things that are particularly often done/understood wrong
AVOID	You should definitely NOT do that.
COMPLEX TOPIC	For advanced students - allow time to read through.

About us

We are a 3-person software development team and since 2005 we strive to support reef aquarists worldwide in their hobby in the best possible way. We are enthusiastic MW aquarists ourselves, not dealers or manufacturers of aquarium products.


Martin Kuhn

Michel Mohrmann

Alexander Karkossa

Our expenses are financed by income from our computer program **AquaCalculator** which is specially designed for marine aquarists.
The license fee is less than 10€ per year. You can then use AquaCalculator on as many of your own devices as you like. Each license is linked to one of four different operating systems, for each of which we create and maintain separate versions.

Several thousand aquarists already use our program and could successfully improve the water values of their aquariums. Complicated calculations, e.g. for the dosage of salts or additional chemicals, are done for you by our software. Likewise, water values, tank occupants and maintenance work can be perfectly documented.

With every license you support and appreciate our development work!

Foreword

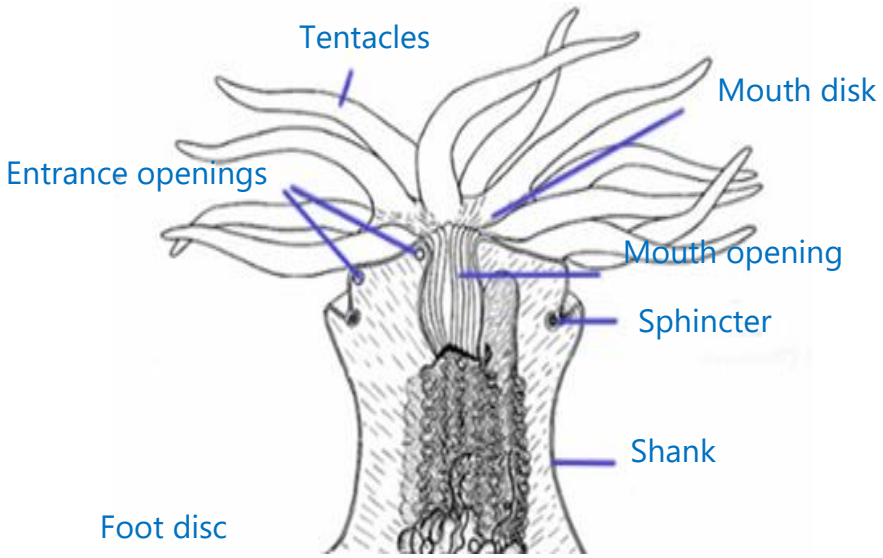
Much of the information in this compendium is taken from "The Anemone FAQ" by (Greg Peterson and Marina Peters of http://reefcentral.com). Thank you, you have done a great job!
We have expanded and updated the FAQ and added more photo documentation.

The husbandry recommendations of the animals are harmonized with the data of Marubis e.V. (www.meerwasserforum.info www.marubis.de)

Part I - Worth knowing

1.1 Structure

Definition: coral-like creatures that can "nettle" and "stick" things.



Anemones have a foot disc, a columnar shaft, and a mouth disc with tentacles. They have zooxanthellae (algae-like tissue) and use light as an energy source. Zooxanthellae provide the energy necessary to survive and thrive, which is why host anemones are usually found in shallow water with high light intensity. They are also constantly searching for plankton or other food, which they catch from the water with their tentacles.

Anemones have a clear gender (male/female) which is indistinguishable for us aquarists. They have a life expectancy of > 100 years.

The name "*host anemone*" comes from the fact that the anemone is considered a host by some creatures. These include anemonefish in particular. Some anemones also host anemone crabs or anemone shrimp.

Anemone fish cuddling in their anemone

Anemone crab in anemone

1.2 Propagation

Cloning / divisionDivisions
occur independently into two or more parts. Emerging individuals are identical clones of the parent.
Sometimes it is even enough to break off pieces of the anemone, from which clones grow.
In aquariums E. quadricolor (frequently) and also H. magnifica and S. gigantea (more rarely) divide.

Shearing off of buds ("budding")
occurs much less frequently (e.g.: S.gigantea and S.mertensii).

Sexual reproduction
occurs through the release of eggs as well as sperm.
Larvae float around for about 1 week and mature into juvenile anemones.
Juvenile anemones are already fully formed individuals including zooxanthellae.
This can also occur in aquaria. The population is kept in check by a few predators as well as the low survival rate of the juveniles.

1.3 Anemone species

In nature, there are 10 species that can be hosts for anemonefish:

Cryptodendrum adhaesivum	Nubby rim anemone or pizza anemone
Entacmaea Quadricolor	Bubble anemone
Heteractis Aurora	Glass bead anemone or sand anemone
Heteractis Crispa	Leather anemone
Heteractis Magnifica	Magnificent anemone, red-footed anemone
Heteractis Malu	Hawaianemone
Macrodactyla doreensis	Corkscrew Anemone
Stichodactyla Gigantea	Giant anemone
Stichodactyla Haddoni	Carpet anemone
Stichodactyla Mertensii	Mertens' giant anemone

Directly to the species guide

1.4 Matching host anemone/fish species

Anemonefish \ Anemone	**Cryptodendrum adhaesivum** Nubby edge or pizza anemone	**Entacmaea quadricolor** Bubble anemone, copper anemone	**Heteractis aurora** glass bead or sand anemone	**Heteractis crispa** Leather anemone	**Heteractis magnifica** Magnificent anemone	**Heteractis malu** Hawaianemone	**Macrodactyla doreensis** corkscrew anemone	**Stichodactyla gigantea** giant anemone	**Stichodactyla haddoni** carpet anemone	**Stichodactyla mertensii** Mertens' giant anemone
A. akallopisos	🟡	🟡	🟡	🟡	🟢	🟡	🟡	🔴	🔴	🟢
A. akindynos	🟡	🟢	🟢	🟢	🟡	🟡	🟡	🟢	🟢	🟢
A. allardi	🟡	🟢	🟢	🟡	🟡	🟡	🟡	🔴	🔴	🟢
A. bicinctus	🟡	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🔴	🔴
A. chagosensis	🟡	🟡	🟡	🟡	🟢	🟡	🟡	🔴	🔴	🔴
A. chrysogaster	🟡	🟡	🟢	🟡	🟡	🟡	🟢	🔴	🟢	🟢
A. chrysopterus	🟡	🟢	🟢	🟢	🟢	🟡	🟡	🔴	🟢	🟢
A. clarkii	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
A. ephippium	🟡	🟢	🟡	🟢	🟡	🟡	🟡	🔴	🔴	🔴
A. frenatus	🟡	🟢	🟡	🟡	🟡	🟡	🟡	🔴	🔴	🔴
A. fuscocaudatus	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🔴	🔴	🟢
A. latezonatus	🟡	🟢	🟡	🟢	🟡	🟡	🟡	🔴	🔴	🔴
A. latifasciatus	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🔴	🔴	🟢
A. leucocranos	🟡	🟡	🟡	🟢	🟢	🟡	🟡	🔴	🔴	🟢
A. mccullochi	🟡	🟢	🟡	🟡	🟡	🟡	🟡	🔴	🔴	🔴
A. melanopus	🟡	🟢	🟡	🟢	🟢	🟡	🟡	🔴	🔴	🔴
A. nigripes	🟡	🟡	🟡	🟡	🟢	🟡	🟡	🔴	🔴	🔴
A. ocellaris	🟡	🟡	🟡	🟡	🟢	🟡	🟡	🟢	🔴	🟢
A. omanensis	🟡	🟢	🟡	🟢	🟡	🟡	🟡	🔴	🔴	🔴
A. percula	🟡	🟡	🟡	🟡	🟢	🟡	🟡	🟢	🔴	🔴
A. perideraion	🟡	🟡	🟡	🟢	🟢	🟡	🟢	🟢	🔴	🔴
A. polymnus	🟡	🟡	🟡	🟢	🟡	🟡	🟡	🔴	🟢	🔴
A. rubrocinctus	🟡	🟢	🟡	🟡	🟡	🟡	🟡	🟢	🔴	🔴
A. sandaracinos	🟡	🟡	🟡	🟢	🟡	🟡	🟡	🔴	🔴	🟢
A. sebae	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🔴	🟢	🔴
A. tricinctus	🟡	🟢	🟢	🟢	🟡	🟡	🟡	🔴	🔴	🟢
P. biaculeatus	🟡	🟢	🟡	🟡	🟡	🟡	🟡	🔴	🔴	🔴

🟢 Recommended, natural host anemone

🟡 Limited recommendable, is accepted as host anemone according to experience

🔴 Not recommended. Risk of anemone encroaching on anemonefish.

Some anemonefish will also accept non-natural host anemones,
while others will be reluctant to seek them out, even though they are mentioned here as compatible.

1.5 Anemone fish

Genus Amphiprion

A. akallopisos *2) 	A. akindynos *2) 	A. allardi *2) 	A. bicinctus 
A. chagosensis 	A. chrysogaster *2) 	A. chrysopterus 	A. clarkia 
A. ephippium 	A. frenatus 	A.fuscocaudatus 	A. latezonatus *2+) 
A.latifasciatus 	A.leucokranos *2+) 	A. mccullochi *2+) 	A. melanopus 
A. nigripes *2) 	A. ocellaris 	A ocellaris black 	A. omanensis *2+) 
A. percula 	A. 	A. polymnus 	A.rubrocinctu 
A. 	A. sebae 	A. tricinctus 	

Genus Premnas

P.biaculeatus 	P.biaculeatus 

*2) Fish rarely in trade

*2+) Fish very rarely in trade, prices usually ≥ 1000€.

Part 2 - Before the purchase

Basic requirement for successful keeping is the purchase of a healthy animal!

Anemones are difficult to transport and susceptible to bacterial infections as well as damage caused by stress. Experienced and reputable dealers take this into account and use specially equipped tanks for anemones and keep the animals before sale.

2.1 Detect healthy anemone n

Healthy anemones...

- ... pump themselves up with saltwater and thus have a "lush appearance"
- ... have tentacles that float in the current and do not hang limply down
- ... have attached themselves with their foot in their preferred substrate (depending on the genus in the sand or in the reef rock) They do not drift freely in the tank, or just lie on the bottom.

An anemone looks "somehow not good" at the dealer?

→ You should not buy this animal at all, because sickly anemones often do not recover after further stress of moving and new conditions in your own tank.

Color

Before buying you should recognize unnatural colorations of anemones!

Healthy anemones do not have pure white/totally transparent tentacles, but have a slightly brownish appearance.

Bleaching of anemones is caused by stress or improper lighting.
Animals in this condition need special care to regain their zooxanthellae.

Uniformly and unnaturally strong colored animals were probably artificially colored by the exporter or dealer

Do not buy colored anemones. They have been exposed to unnecessary stress.
If they regenerate, they will return to their original color after about 1 year.

Mouth

It must be without mechanical damage and closed.
Under no circumstances should giblets protrude from the mouth or the mouth be turned inside out. (This would be a sign of stress, illness, or both).

Foot disc

Foot disc (or "the foot") must be complete and undamaged and should adhere to a rock, substrate or aquarium glass.
It must not be torn or infected. Damage to the foot can be fatal to an anemone.
If an anemone is attached to a rock, it is recommended to buy it together with the rock. Otherwise, make sure that the anemone is removed carefully and without injury.

Feed intake

Some, but not all anemones will feed when healthy.

Ask the dealer to feed the anemone in your presence. Suitable food
(chopped small smelts∅ 5mm, mysis, ...) will either stick to the tentacles of the anemone, or will be "grabbed" by them and then guided to the mouth opening and devoured.

This test is only recommended at the time of purchase. You should not feed anemones regularly.

2.2 The right anemone for your tank

Your decision should be based on 4 factors:

1. Only choose an anemone that you can keep.
   Better choose an anemone that is a little easier to keep if you are unsure!

2. Type and size of the anemone must be adapted to the anemone suitability of the tank.
   Refrain from buying anemone species that grow too large!

3. The anemone must be large enough not to be "death nuzzled" by clownfish.

4. Suitable place for the anemone within the reef must be available.
   (Anemones can nettle or eat other animals).

Consider your reef as a whole and imagine what you expect from your anemone. The following questions will help you make your choice:

- Should the anemone be in the sand, or in the reef structure?
- Do you want a small or a large anemone?
- Is the anemone allowed to wander in the tank or should it remain in place (=sessile)?
- Do you plan to keep a specific type of anemone fish?
  Are they rather large/small, rather tame/rabid to anemones?

You can keep all types of host anemones in MW aquariums.
However, there are species that are easier/difficult to maintain. It is recommended to start with an "easier species" before moving on to a more difficult species.

Medium heavy	Difficult	Very difficult
E. quadricolor	M. doreensis	C. adhaesivum
S. haddoni	H. aurora	H. magnifica
	H. crispa	S. gigantea
	H. malu	S. mertensii

Directly to the species guide

2.3 Different anemones together in one tank

Opinions differ on this. A considerable number of aquarists report problems with this. There seems to be a kind of "chemical competition" between anemones of different species.

Fighting may or may not occur between anemones of different species. These try to entangle each other or devour each other when they come into direct contact.

Keeping several individuals of one genus is possible without any problems - even if they have different colors and come from different parts of the ocean.

If there are signs of stress or fighting, YOU should remove an animal or move it within the aquarium.

2.4 Suitable basins

Refrain from buying anemones, which can become too large for your tank, because anemones can grow quickly.

Larger tanks are more stable in terms of water parameters than smaller ones, which increases the chances of successful husbandry.

Dominant E. quadricolor in a too small reef tank

Some anemone species CAN be kept in smaller tanks.
However, only if you focus exclusively on the anemone and do not add anemone fish. Flow conditions in small tanks are often difficult.

Anemones look for suitable places in the tank and take them for themselves.
In reef tanks with heavy coral stocking this can lead to problems due to entanglement.

Do not keep anemones in tanks that are too small!

Clownfish in a nano aquarium are a no-go!

Keeping different species of anemones is recommended in tanks from 350 liters.

The following advice takes into account species-appropriate swimming space or territory for the fish. It is unfortunately common for these animals to be kept in smaller tanks.

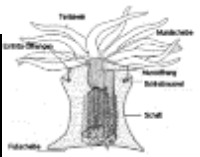
The recommended tank sizes are controversial. The recommendations mentioned here are an In-Etwa summary of the recommendations of nearly 10 German-speaking experienced sea water aquarists and are harmonized with the keeping recommendations of the association Marubis eV.

2.5 Tank size for species-appropriate husbandry

Your tank should have the larger of the two liter numbers or more.
If you do not want to keep anemonefish, it is sufficient to consider the first table.

Basins with a more square shape are more suitable than long, slender aquariums.

Recommended minimum tank size for **anemones**



Anemone species	Max-∅	Minimum pool volume	Recommended pool volume
Cryptodendrum adhaesivum (knobbed edge / pizza anemone)	30 cm	**from 150 L**	**≥ 200 L**
Entacmaea quadricolor (bubble anemone)	40 cm	**from 160 L**	**≥ 200 L**
Heteractis aurora (glass bead, sand anemone)	50 cm	**from 160 L**	**≥ 200 L**
Heteractis crispa (leather anemone)	60 cm	**from 200 L**	**≥ 200 L**
Heteractis malu (Hawaianemone)	60 cm	**from 200 L**	**≥ 400 L**
Heteractis magnifica (Magnificent anemone, red-footed anemone)	60 cm	**from 400 L**	**≥ 500 L**
Macrodactyla doreensis (corkscrew anemone)	30 cm	**from 150 L**	**≥ 200 L**
Stichodactyla gigantea (Giant Anemone)	60 cm	**from 200 L**	**≥ 400 L**
Stichodactyla haddoni (Carpet Anemone)	60 cm	**from 200 L**	**≥ 400 L**
Stichodactyla mertensii (Mertens Giant Anemone)	90-100cm	**from 400 L**	**≥ 1500 L**

Recommended minimum tank size for **anemonefish**

Designation	SizeFish	Basin volumeMin/Recommendation	Designation	SizeFish	Basin volumeMin / recommendation
A. ocellaris	8 cm	**110L / 200L**	A. ocellaris black	10 cm	**110L / 200L**
A. percula	6 cm	**110L / 200L**	A. perideraion	8 cm	**150L / 200L**
A. leucocranos	8 cm	**150L / 300L**	A. melanopus	9 cm	**150L / 200L**
A. sandaracinos	10 cm	**150L / 400L**	A. polymnus	10 cm	**150L / 200L**
A. clarkia	10 cm	**150L / 400L**	A. nigripes	10 cm	**150L / 200L**
A. akindynos	10 cm	**150L / 400L**	A. chagosensis	11 cm	**150L / 200L**
A. frenatus	10 cm	**150L / 300L**	A. akallopisos	11cm	**200L / 300L**
A. chrysopterus	12 cm	**200L / 400L**	A. tricinctus	12 cm	**200L / 300L**
A. rubrocinctus	12 cm	**200L / 400L**	A. mccullochi	12 cm	**200L / 300L**
P. biaculeatus	14 cm	**200L / 400L**	A. latifasciatus	13 cm	**200L / 300L**
A. allardi	14 cm	**200L / 400L**	A. chrysogaster	14 cm	**200L / 300L**
A. ephippium	14 cm	**300L / 400L**	A. fuscocaudatus	14 cm	**300L / 400L**
A. omanensis	14 cm	**300L / 400L**	A. sebae	16 cm	**300L / 500L**
A. bicinctus	12 cm	**400L / >1000L**	A. latezonatus	14 cm	**400L / >1000L**

Distinguish between:
- Pure species tank (anemone + pair of anemone fish)
  → less space needed
- Mixed reef aquarium (together with other animals, corals)
  → higher space requirement

Consider possible aggressiveness from territoriality behavior of the fish.

The most aggressive are A. clarkii and Premnas biaculeatus.

2.6 Flow & Technology

Anemones prefer **medium** to **strong current**.

They "breathe" by absorbing oxygen from the water around them.
Food is flowed to them. Current also removes their excreta.

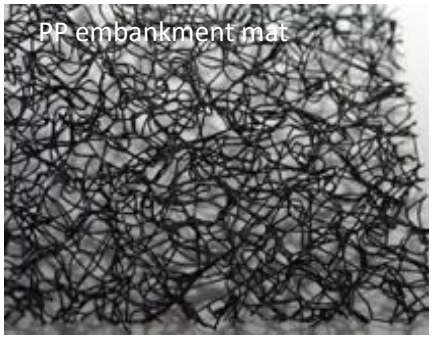
If anemones are settled in low flow areas in the tank, they will begin to migrate more frequently to find a site with stronger current. Some species (e.g.: H. magnifica) are known to require strong indirect current and actively seek it.

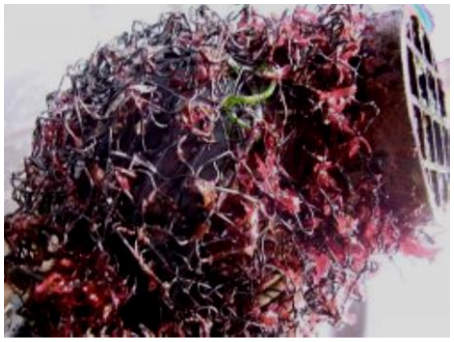
This way you make your tank anemones suitable/safer:

- Cover suction openings of pumps to avoid sucking or cutting up the anemone. the anemone.
  (Anemones do not register/register too late when they are sucked in by pumps).
- Ceiling overflows, if possible, from the top
- Cover heaters so that the anemones do not suffer burns

There are flow pumps with integrated suction protection.

You can also build an intake protection yourself from **PP slope mats.** The material can be purchased inexpensively from pet stores or pond suppliers.
The endangered inflow slots of the pump are simply wrapped with it.
Then fix the whole thing with cable ties.





2.7 Prerequisites for successful husbandry

 The **tank biology MUST be stable to** successfully keep anemones.

Tanks must be well run-in before you add anemones.
Rule of thumb: allow ½ year after the tank has been run in and your mini-ecosystem is stable.
This specifically includes the presence of a stable bacteria population.
Earlier introduction, while theoretically possible, poses a significantly increased risk.

Anemones require clear and uncontaminated water with high oxygen saturation.

Anemones love medium and indirect current. This is needed to transport food and wash away debris.

Required water parameters for successful keeping of anemones

- ammonium	0 mg/l
- Nitrite	0 - 0,5 mg/l
- nitrate:	0,1 -5 mg/l
- Phosphate:	0.01 - 0.05 mg/l
- Salinity:	34.0 - 35.5 psu
- pH:	8.0 - 8.4 (measured in the evening)
- Temperature:	24 - 26°C.

Stable running pool
Unstable running tanks with wide temperature swings, pH spikes, and frequent density (salinity) changes will most likely kill anemones.
Larger tanks are much easier to control than smaller ones. However, good aquarists can maintain stable systems in smaller tanks.
Golden rule: patience, patience and more patience, and SLOW changes to the system.

Lighting
Host anemones usually live in shallow water in nature, because of the strong UV lighting there.
Your tank should therefore also have good UV lighting.

2.8 With or without anemonefish ?

Anemones can be very comfortable even without anemonefish.
For keeping anemonefish they are not mandatory,
but recommended.

In the wild, anemonefish are always/only found in anemones. In aquariums, anemonefish may also accept non-host anemones or even long-polyped stony corals (LPS) as a "host".

For a species-appropriate keeping of anemonefish, as well as avoidance of unnecessary stress, however, a suitable anemone belongs. It massively increases the well-being of the fish.

2.9 Dangers for other tank inhabitants

An anemone will try to eat things if it has the opportunity.

When placing them, you should consider 2 groups of creatures

- potential enemies
- potential victims of anemones.

EnemiesSome species of nudibranchs, bristle worms, butterflyfish, large angelfish, and large pufferfish. Even with a pair of clownfish guarding the anemone, enemies may peck at the anemone until even the anemonefish eventually take flight.

Victim
Typical victims are smaller bottom dwellers or slow swimming fish such as mandarin fish, blennies, gobies and seahorses.
Especially S. haddoni is known to eat anything that comes in contact with its oral disc - including crabs, snails, sea urchins and shrimps.

Part 3 - Insertion and acclimatization

Anemones can absorb a large amount of water in their tissues.
Sharp differences between tank water and anemone body fluids can have a negative effect. Rapid changes in pH, salinity and temperature are critical.

3.1 Acclimatization

- Hang bag or container with anemone in the tank for some time (temperature equalization)
- Constantly replace the water in the transport container with your own pool water. The water in the anemone container should be completely replaced with water from your own tank over a period of approx. 1 hour.

Then carefully remove the anemone and place it in a suitable place in the tank.
Do not expose the anemone to too strong a change in light conditions too quickly, as transport often takes place in the dark.

3.2 Your anemone wraps around your hand ?

Sometimes anemones try to hold hands or other objects. Do not panic!

- Do not try to remove the hand, you may injure the anemone
- Wait and see. The anemone will let go of your hand after a minute or two.
- If unsuccessful: Gently massage the shaft of the anemone.
  Most anemones contract as a result.

3.3 Optimal position in the basin

Inform yourself about preferences of your desired anemone before buying!
Some anemones are sand anemones, others settle in the reef or in reef crevices.

Where should your anemone settle in the aquarium?
→ Set up the environment in your aquarium accordingly beforehand.

With good conditions and a suitable position, you have a good chance that your anemone will keep the place you gave it when you put it in.

3.4 Anemones on the move...

Anemones don't really want to move, but they do when they have a reason to! They have a will of their own and "wander" through the tank to the place they like. The
risk of this is during placement, and insufficient conditions in the tank.

Migrating anemones will harm other creatures they touch (corals and/or invertebrates). Therefore, if your tank is full of high quality corals, you should consider using an anemone species that prefers places at the top of the reef.

Absence of wandering is the best indicator that the anemone is healthy and satisfied with the conditions in the tank. In this case, most anemones are site-faithful for years.

If your anemone starts to migrate something is wrong!

- Optimize your water values if they are not in the recommended range.
  Compendium: Perfect water values in your reef aquarium

- Find out where your anemone species feels comfortable and set up a cozy spot for it.

3.4 Remove or relocate anemones

Anemones are not very easy to relocate because their foot discs are attached to substrate, rock, or parts of the reef. Likewise, some anemones seek out crevices or cavities to anchor themselves in.

Methods:

- Tickle" the anemone with as soft a toothbrush as possible, or undermine the outer areas of the foot disc with the bristles of the toothbrush. Proceed carefully and slowly. The process usually takes 10 minutes, or longer.

- If possible: Remove the stone on which the anemone is sitting from the reef construction and lift it out of the water for a short time. Hold the anemone down while doing this. Gravity will work against the anemone and it will be easier to remove.
  You can also remove
  the animal completely from the water if it is not in danger of tearing.

Loosening an anemone with a soft toothbrush. Stone removed from water.

- It may be sufficient to rotate or move the stone on which the anemone sits.

- If the foot disk is exposed (if the anemone has attached itself to a disk, for example:), slowly and carefully slide a fingernail or check card under the edge of the anemone and then carefully peel off the animal.

- If an anemone is in an inaccessible area, it can be induced to move on its own by changing the environmental conditions.
  - Especially increasing the current usually works quite well
    (direct blowing with a flow pump, best at the base)
  - Reducing the flow (works only sometimes)

- Increase or reduction of lighting intensity (works only sometimes)

- If the anemone sits in an accessible place, you can put a tube or a pot with a hole over it. Due to the complete light deprivation, the anemone will first stretch and then let go of the stone in order to migrate in the direction of the (light) opening. The important thing here is that the tube/pot completely encloses the anemone and it cannot find another opening to crawl out from between. Here you can help with smaller stones and coral glue.

- Touch the anemone with a steel spoon. The electronegativity difference (similar to when we bite on aluminum foil), cause the animals to "let go" and begin to migrate.

3.5 Intermediate holding eration before planned relocation/transportation

The anemone has been successfully freed/detached from the substrate, but you don't want to move it for a few hours? You want to prevent it from reattaching in the tank.
Put the anemone in a flower/clay pot back in your tank. Put some coarse pebbles or coral rubble in the back of the pot so the anemone can't get stuck there.
Then cover the opening with a nylon stocking and fix it (knot the rubber ring or stocking).
The anemone should not remain in this "prison" for
too long!

Part 4 - Nutrition

4.1 Feeding anemones?

Most anemones do not need to be fed, but can be.
For some species supplemental feeding is recommended, for others not (see species guide). Anemones can feed in different ways, especially if they have healthy zooxanthellae and are offered good light. If necessary, they "help themselves" to the fish food.

- Feed only small pieces
- Hold/bring food to the tentacles, but do not put it in the mouth opening
- Feed can be enriched with vitamins, or garlic
- DO NOT FEED stressed or stressed animals!

Although anemones can consume large pieces of food, it is better to feed more frequently but smaller pieces. Too large pieces will be devoured, but may begin to rot in the anemone's digestive system.

Recommended food: Krill, Mysis or Artemia, or also smaller pieces of fishes
(cut into pieces, not larger than ~5mm! Thaw deep frozen smelts beforehand)

Mussels (e.g. scallops) are not recommended as anemone food.
There are known cases where death of the anemones followed after mussel feeding.

Anemones can eat granular/flake food provided they can reach it with their tentacles - provided the right spot in the aquarium where the current drives the food directly into your tentacles, some anemones will consume respectable amounts of it.
Observe the relationship between food offered and the health of the animal, the growth of the anemone also depends on the amount of food.

Healthy anemones show a clear reaction to food. They try to hold on to what gets into their tentacles and then consume it. Mostly it is enough to bring a piece of food in contact with the tentacles (e.g. with hand, pipette, tongs, feeding sticks or similar). Healthy anemones will swallow even larger chunks within a minute. Anemones that are in poor health or stressed take longer to do so.

In these cases it is advantageous to help a bit and prevent other inhabitants (especially crabs or shrimps) from stealing their food. Another method is to place a net or perforated cup over the anemone during feeding to allow it sufficient time to feed.

4.2 Other animals steal food from my anemone.

Feed these animals before the anemone, because they are less aggressive when they have just been fed.
If this does not work, you can use a net, basket or fish breeding cage during feeding to prevent disturbance by tank mates.

Cleaning shrimp foraging on anemone

4.3 Will my anemone eat fish or other animals?

At least she will try.

Anemones are voracious. If they can grab something with their tentacles, they will try to eat it. In most cases, fish know that they should stay somewhat away from anemones. Nevertheless, attacks do occur when a fish swims into an anemone or the anemone manages to grab an animal on its own.
This risk is greater for sand anemones and bottom-dwelling animals than for those living in rock crevices. Especially carpet anemones (S. haddoni, S. gigantea, C. adhesivum and S. mertensii) are notorious fish eaters, probably because of their shape adapted to the ground and their strong adhesive power.

One way to prevent this is to keep anemonefish in the anemone, as they have strong territorial behavior and will try to drive everything out of their anemone.

Night lighting (moonlight) is also advantageous. It helps your fish not to accidentally swim into an anemone at night and become a victim.

H.Crispa grabs a starfish

Cleaning shrimp becomes a victim of glass bead anemone

5.1 Division

Photo series: division of an E. quadricolor into 3 parts




5.2 Bring about division

Anemones divide more often when they are stressed or when conditions in the tank do not suit them. By dividing they improve their chances of survival.

The following measures to deliberately initiate division are possible:

- Feed anemone heavily for several weeks at first, then do a single large water change of about 50% of the tank volume.
- deliberately set the nutrient balance in the tank unfavorably ("nutrient-rich", high nitrate/phosphate values)
- Many aquarists claim that anemone divide naturally if you provide them with good environment and plenty of food.
  The frequency of division here is relatively low (1-2 x year).

Measures 1 and 2 are not natural/species appropriate and are a stressful situation for the animal.

5.3 Forcibly divide anemone

E. quadricolor can be propagated by forcible division and is best suited for this maneuver due to its robustness. However, it should also work with other anemones,

Warning: The whole thing is not for the faint-hearted and extremely brutal for the animals.

- Carefully remove the anemone from the tank and place it on a clean, smooth surface
- Tentacles strip outward
- Cut the anemone into 2 equal parts with a cutter knife or scalpel.
  The cut must go through the center of the
  shaft and foot disc.
- Place the anemone in a container with water from the tank for approx. 1 hour
  to avoid contaminating the tank with escaping tissue, innards, etc.
- Put both halves back into the tank. It is best to put them in a place with only a slight current, as they cannot attach themselves now (trough or crack in a stone).
- Wait for healing process

6.8 My anemone has disappeared in my reef setup

Rock anemones (most commonly *E. quadricolor*) sometimes retreat into the reef structure. Usually this happens because anemones want to rest or divide. In many cases, this behavior is ok and the anemone will subsequently reappear if it is hungry or seeking light.

If the water quality is too poor or the environment of a tank is unsuitable for keeping the particular anemone species, anemones will withdraw due to stress.
In this case the anemone needs a rescuer and you should move it to a tank with better conditions.

6.9 Damage to corals

The stinging venoms of some anemone species are relatively strong. The greatest danger occurs when anemones migrate, moving over coral sticks and nettling them at the points contacted.

If your anemone has placed itself in a position where its tentacles are in contact with a coral
→ remove the coral and fix it at another place

Sinularia soft coral nested by an E. quadricolor

Tree soft coral nettled by an anemone

Part 7 - Health topics

Biologically, anemones are simple creatures. However, they are almost completely dependent on the environment offered to you.

Anemones have limited ability to recover from stress, damage or disease.

Anemones are difficult to transport and often reach the aquarium trade in poor condition.

This, in combination with possibly also unfavorable conditions in your home aquarium often leads to the fact that anemones are not beginner animals.

Consider these points

- Internalize the contents of this compendium before purchase
- Be patient and optimize the conditions in your tank
  before you add an anemone.
- Just look for an anemone genus that is suitable for your tank and does not grow too large.
  Do not let yourself be blinded too much by the optics!
- Buy only really healthy anemones

7.1 My anemone does not look very good - What should I do?

There are many reasons for stress or poor well-being of anemones.
Study this FAQ and try to find out and eliminate the cause of poor well-being using the following checklist.

Ask yourself the following 4 questions:

- ☑ Was the anemone healthy to begin with?
- ☑ Is my tank/system suitable in all respects for keeping anemones?
- ☑ Have there been any recent changes to the water quality or environment?
- ☑ Has there been any recent physical stress on the anemone
  (injuries or attacks from other tank inhabitants?).

If the reason can be found in your tank, the animal should be moved to another tank. However, you expose it to further stress.
(Otherwise you leave it in the tank and hope for improvement/healing).

7 .2 "Bleached" anemone n

Signs of bleaching

- Zooxanthellae population is depleted, has been expelled, or has died off
- The basic coloration of the anemones is unnaturally bright/white to transparent

Bleached H.Crispa

Healthy anemones have zooxanthellae in their body and tentacles, which support them in the supply of nutrients. These are brown colored, which is why healthy animals have a light brown basic coloration. The intensity depends on the lighting intensity under which the anemone is kept and the zooxanthellae population. In case of stress or poor water quality the zooxanthellae population can be depleted or even die off completely.
This condition is called "bleaching".
Healthy, dark-colored anemones may take on a lighter, paler coloration overnight. However, bleached anemones are white to translucent and lack the distinct brownish coloration. The absence of zooxanthellae is a health hazard, as this deprives the anemones of an important source of energy/ and nutrients.
There can be, even with completely bleached anemones, an improvement/healing if the animal finds very good keeping conditions. This includes frequent feeding, good water quality and lighting intensity/quality and current. Daily feeding as well as appropriate light quality will assist the animal in rebuilding its zooxanthellae population. This process takes some time (~1-3 months). The anemone will regain its typical brown coloration during this process.

Unfortunately, bleached anemones are still common in the trade and even appear particularly attractive to many laymen.

**You discover a bleached anemone in a sales tank?
→Point out that the animal should not be sold in this condition!**

There are, but relatively rare, anemones with tiny red or blue dot at the top (appearance similar to C.crispa. Occurrence: Great Barrier Reef/Australia).

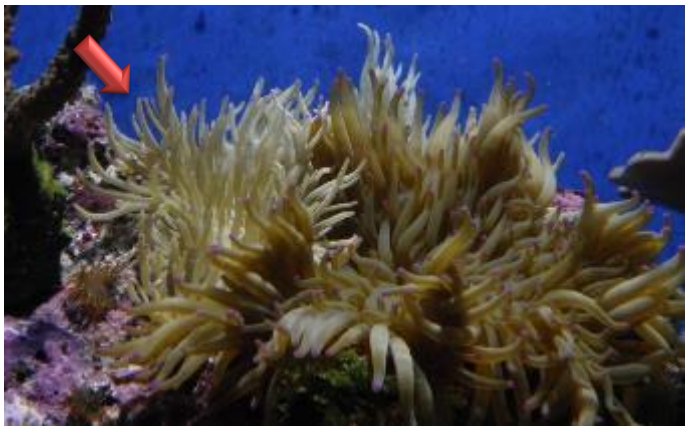
Photo series: Successful recovery of a bleached H.Crispa. (Photos/Aquarium: Gabi Boelkes)

Start

- Bleached anemone with a clear whitening shortly after purchase. (To the right of it a healthy animal)
- Anemone is usually open during the day. But often contracts at night
- From here on slight feeding (2x week, krill 6-8mm) and good husbandry conditions

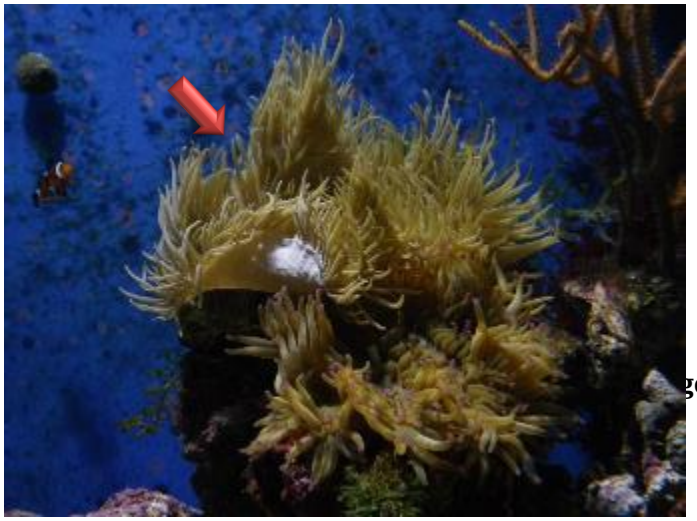
After 2 weeks

- Anemone takes a slight cream coloration
- Stone placed higher in the reef structure (more intense light)



After 4 weeks

- Cream coloring becomes more intense



After 5 weeks

- The brownish coloration has returned.
- Zooxanthellae are regenerated.
- Anemone has increased in size

Photo series: Recovery of a bleached C. Gigantea (Photos/Aquarium: Bianca and Felix)

Start

- Bleached anemone with white coloration and almost transparent tentacles.

After 4 weeks

- Brownish coloration has returned. Zooxanthellae were regenerated.
- Anemone has increased in size and tentacle length.

Photo series: Unsuccessful healing attempt of a bleached H. Magnifica

(Photos/Aquarium: Dietmar Schauer)

Start

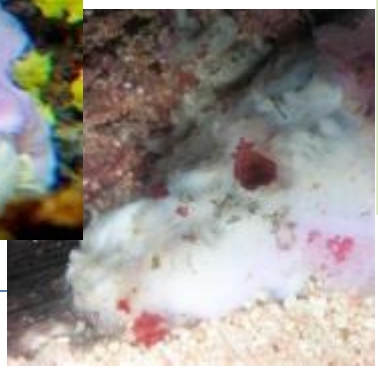
- Bleached animals tempt by their supposed "attractiveness" again and again to buy.With Dietmar Schauer it has even "caught" a very experienced MW aquarist here.
- The conditions in the aquarium are good. Except for slightly short tentacles the animal does not look unhealthy and attaches itself to the reef.

After 2 days

- Look at the transparency/light transmission of the tentacles.
- The anemone even eats food (artemia).
- Anemone fishes do not seem to notice the battered condition. They cuddle in the anemone.

After 9 days

- The tentacles become increasingly shorter. Tips tapered in the process. The animal looks worse day by day
- Anemone gradually loses contact with the reef and begins to wander around



After 13 days

- Condition is getting critical. The battered anemone does not manage to regenerate.
- The end of the anemone. Remains are removed from the aquarium.

7. 3 "Colored" anemones

An anemone is called colored if it has been given a different appearance by dyes/pigments.

Anemones are sometimes colored by exporters to cover up pale/pale coloration or to gain special attention from the buyer. However, the coloration is harmful to the animal. If it survives, it will return to its natural coloration in the long run.
Colored anemones can be recognized by uniform and strong, usually unnaturally strong coloration of all body parts, including tentacles and feet. If you find squeaky yellow, bright orange or bright pink animals, they are most likely colored.

Colored anemone

7.4 Tentacles curl/twist

Healthy anemones sometimes have curved tentacles - most commonly S. gigantea or S. haddoni. This is not a sign to be careful, rather the opposite, a sign that the anemone is comfortable and the environment is suitable.

If this is also accompanied by shrinking and other signs of discomfort, you should take a closer look at your tank, because then it is a sign of stress.

7.5 Something spills out of the mouth

Possible causes:

- Anemone has eaten something that contains indigestible parts (fish bones or similar). After digestion, these are excreted again through the mouth.

- Anemone "shrinks" to remove waste from its body or regulate its internal water chemistry. The water flows out through the mouth and may also contain body mucus.

- Sexual reproduction / spawning (see also 7.6).
  Ova or sperm are released through the mouth opening. The females' eggs are colored globules the size of sesame seeds. The sperm of males looks like a lightly colored puff of smoke.

Excretion of a sticky, dark brown substance through the mouth is a bad sign. It usually means that the anemone is shedding its zooxanthellae,
(due to stress or injury) or has an internal infection and is shedding bacteria and/or dead tissue.

7.6 Anemone looks upside down - especially at the mouth.

This is a sign of severe stress/discomfort and an indication of near death!

- Watch animal closely
- In case of deterioration: possibly remove the already dead anemone from the tank

Provided the conditions in the tank are good, waiting and seeing if the anemone can recover is the only thing you can do.

Sometimes anemones show this behavior immediately after being placed in a new tank or if they have not been carefully acclimated.

DO NOT feed anemone in this condition

7.7 Anemone shrinks and expands

Anemones shrink at consistent intervals to eliminate waste and adjust their water chemistry. However, if this happens too frequently (more than twice a week) or they remain shrunken for more than 2 hours, you should find out what factors are triggering this state of stress. Most often the anemone is unhappy with the water values or has insufficient lighting (too bright or wrong light spectrum).

If the anemone shrinks every time the lights are turned on, this is a sign of lighting shock. This can happen if the anemone is not yet fully acclimatized, or especially if it does not have enough zooxanthellae (see also bleached anemones). Rarely also if the lighting is too intense or too yellowish.

7.8 Anemone does not attach / rolls around in the tank

This is often a sign of insufficient water quality or insufficiently acclimated tanks. Check your water values. Determine what the cause may be and eliminate the problem.

This also often happens when new animals have been exposed to too much transport stress.

→ Check your anemone keeping parameters and optimize them

You have a **sand anemone**?
These have this problem more often when they are newly placed.
If the animal looks otherwise healthy, try carefully 'planting' it in the substrate. Dig a hole and put the anemone in so far that the complete shaft is covered and only the tentacles stick out at the top.

7.9 Anemone smokes from mouth

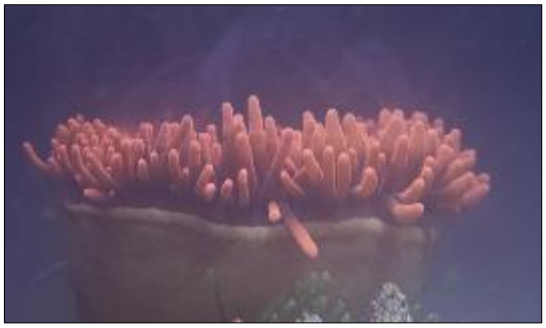
Probably your anemone is releasing sperm, which also makes the water milky. Take care especially now for effective skimming/filtering as the water load is not without, especially in smaller tanks.

Photo series: Sperm release of an E.Quadricolor (Photos and aquarium Thorben Wengert)

- Large E.Quadricolor
  (here in still normal condition)

- Incipient sperm delivery

- Stronger sperm delivery



- Clearly visible turbidity of the water
- Anemone Inflating the foot
- Anemone Shortening its tentacles

7.10 Medication?

Unfortunately, there are no drugs suitable for anemones yet, as there is little research/development in this area.

A home remedy that has a positive effect on all inhabitants of MW aquariums is garlic.

- Squeeze or mash fresh garlic and enrich the food with it or add it directly to the tank.

7.11 Tentacles of the anemone are getting shorter/disappearing.

If ALL tentacles shrink: → Sign of hunger.

If only some tentacles are missing, shrink or look like "empty shells".
→ Sign of physical damage.

If the lighting is too weak and anemones also get no/ little additional food, they switch into a kind of survival mode. They then eat their own body tissue to survive.
One of the clearest signs is when the tentacles become shorter and shorter and eventually just look like nubs.
Anemones can regenerate from this condition if kept in a healthy environment with good water values and lighting. Targeted feeding helps with regeneration.

Anemones can also acquire physical damage (e.g.: attacks by fish).
They can also be held in check by large LPS colonies or be eaten by larger worms (e.g. jawworms, firebristle worms). The latter can be recognized if the damage always occurs at night.

A sign of an attack is always a localized damage of your anemone.

7.12 The sad end

Dead anemones can be recognized by their fringed appearance and strong odor.

Anemones decompose quickly and then smell FURIOUS.
If your anemone starts to get holes or cracks or pieces break off, then it is decomposing. The decomposition process starts even with anemones that are just alive.

In this condition, the anemones are almost always lying on the bottom or floating in the current. Remove the anemone from the tank and dispose of it immediately if it STINKS or dissolves. Otherwise, carefully put it back into the tank and continue to observe it.

Deceased H. Magnifica

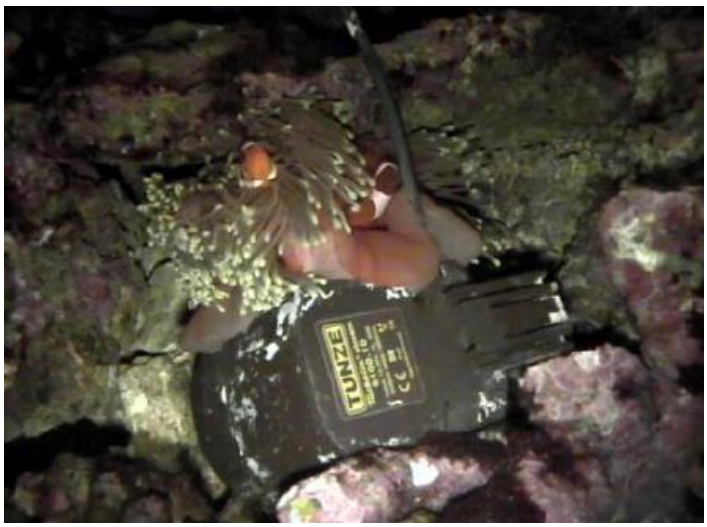
Deceased H.Crispa

Dead anemones do not release toxins (contrary to what is sometimes claimed by laymen) But the onset of decomposition worsens the tank biology

The ammonium/ammonia increase due to the decomposition process can be critical especially for smaller tanks and large anemones. Just like the decomposition process of any other creature. Horror stories according to which every "tank tilts" when anemones dies are humbug.

8.1 Flow pump n

Photo left: H. Magnifica gets too close to a current pump while wandering and is sucked in
Photo right: Current pump was switched off and placed in the reef to make it easier for the anemone to reattach.



Unfortunately, this is a common occurrence with migrating anemones, as the animals either do not have a sufficient sense of pain, or the suction power of the pumps is high.

- Switch off current pumps briefly in case of "imminent danger" (migrating anemone).
  The anemone will then probably continue to migrate.
  However, this is not a solution, because when switching on again, there is a risk that the anemone will visit this place again.
  Caution: In tanks with only one flow pump, the pump may only be switched off briefly in order not to risk other problems such as oxygen depletion due to an incipient bacterial bloom.

- If the anemone has already been sucked in: Turn off the pump, disassemble it and try to remove the animal (if still present) from the pump.
  The tank water is usually very turbid in this case. If possible, remove smaller parts of the anemone from the tank (net) and ensure quick decomposition of any remains as well as any nutrients/pollutants created by:

  - strong filtration/skimming
  - carbon filtration
  - addition of EasyLife or similar products

In a stable environment, (pieces of) anemones can recover even from nasty injuries - including "being cut in half". However, this increases the risk of infection, which often results in the death of the anemone, especially for species that are more difficult to keep. It is best to place the anemone in a particularly suitable and safe place after such an accident and to observe it well in the next time. Suitable for this purpose are, for example, clay pots that you place in your tank. If its condition deteriorates, you should remove it from the tank.

The following photo series by *Sascha Bill* impressively shows the regenerative capacity of a shredded E. quadricolor.

The accident: Anemone got into the intake of a flow pump.
Parts in the pump were operated out and separated in buckets.
Then put back into the tank at a weakly flowing place.

1 day later: The mechanical injuries that have occurred are extreme.
The anemone nevertheless migrates to a dimly lit spot in the tank.

7 days later: The anemone has shrunk and shed dead tissue.
The structure is firmer again, but still without mouth opening.
Onset of regeneration of the damaged body parts.

14 days later: Further regeneration! Foot disc and mouth opening form again.

21 days later: Strong progress in regeneration.

Various tentacles as well as the round body shape are again reproduced (at the time of the photo just retracted)
The foot disk is completely present again.

30 days later: Anemone has reattached to a semi-shaded spot and continues the regeneration**.**

8.2 My anemone has been torn into

This can happen, for example, due to falling or shifting stones in the reef.

 Do not interfere. You would only further stress the animal.

Over the next few days you should monitor the anemone more closely and see if its condition improves or worsens. Healthy anemones can usually recover from minor cracks as well as other physical injuries.

However, if the animal gets an infection or starts to decay, you should remove it from the tank.

8.3 Anemone fishes put my anemone to

Clownfish are often rude to small or newly inserted anemones.

Make sure you put in anemones that are not too small if you already have clownfish in the tank. With small anemones and large/grouped anemone fish, the chance that the fish will "cuddle the anemone to death" is unfortunately quite high.

Rule of thumb: Diameter of the anemone should be at least twice the length of the clownfish. With 2 clownfish correspondingly larger.

Some anemonefish also nibble the tentacles of anemones
This behavior is unfortunately observed more often and cannot yet be explained exactly.
Some clownfish tug and pull at the tentacles and occasionally even rigorously tear out tentacle tips or entire tentacles.

In adult and sexually mature clownfish, these attacks can become quite aggressive. Occasionally only other anemones or LPS in
the tank are attacked, less the "own anemone". Larger anemones recover from this more easily than smaller ones.

Feed your anemonefish more frequently and observe if this tendency decreases
In case of emergency you have to separate anemone and clownfish.
Sometimes it is enough to relocate the attacked animals.

8.6 Attacks by Reef Dwellers

In most cases, there are no creatures in reef aquariums that will actively attack anemones.

If you keep anemonefish in your anemone, you further reduce the risk of attack, as they will persistently try to drive all other creatures out of "their own" anemone.

Anemones can be attacked by

- Great emperor fish
- Parrot fishing
- Some wrasse species

Other predators

- Some species of slugs
- Jawworms
- Fire bristle worms

Part 9 - Other

9.1 Replacing host anemones?

Clownfish have a strong instinct for a host creature. If no suitable anemone is available, they also use animals that are "anemone-like".

- LPS corals that are (Gonipora, Euphyllia, etc)
- Large leather corals / mushroom corals
- Xenia
- Caulerpa accumulations

If no live host animal is available, anemonefish will accept other suitable places as their territory. Breeders use upturned flowers/clay pots or make a shelter out of PVC pipes for this purpose. Put clay pots down (do not stand them up). Container should not have sharp edges anywhere.

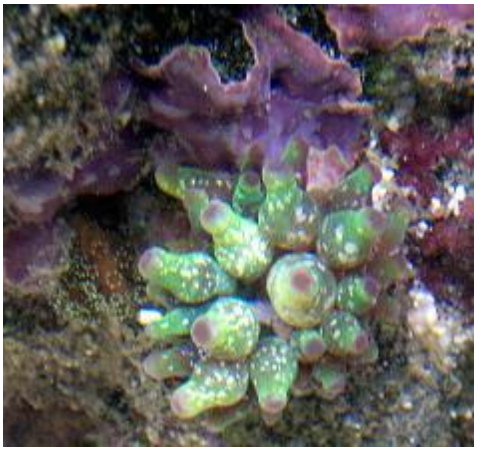
The presence of an anemone is not essential for keeping healthy anemonefish. Even spawning of anemonefish pairs is possible without anemone without any problems.
Keeping anemonefish without a suitable anemone is of course not species-appropriate

Beware of large elephant ears (Amplexidiscus fenestrafer) these WILL eat clownfish sooner or later should they try to use them as hosts.

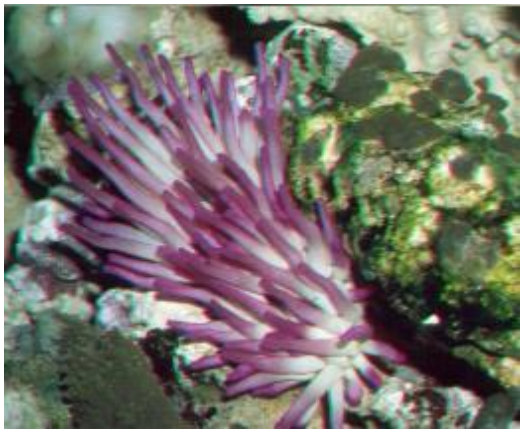
9.4 Other anemone species (not host anemones).

There are also various non-host anemones. These require similar care conditions as host anemones and can also serve as hosts for anemonefish. However, the chance that anemonefish will accept them is significantly lower than with host anemones that match the respective anemonefish species. The best known are:

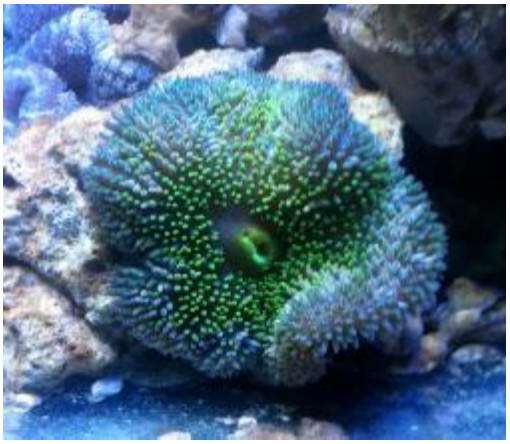
Cribrinopsis Crassa (meat anemone, mini anemone)
is an alternative especially for smaller tanks, because it grows only 5 - 10cm. The animals divide in similar frequency as bubble anemones (see also right picture) and are relatively easy to keep.
They usually attach themselves in the reef structure with light to medium current.



Condilactis Gigantea (Caribbean Golden Rose) in tank ~40cm in nature >1mDifficulty
: medium to difficult to keep.
Optimal location is near the bottom with their foot under rocks at medium current.
Color varieties with purple or green tentacle tips. Division rarely occurs in aquariums.



Stichodactyla Helianthus Sun Anemone / Sunflower Anemone



Reaches about 30cm in aquariums, but also grows larger in nature.
S.helianthus is a member of the carpet anemone genus and is highly nettlesome.
Attacks on other tank inhabitants have been reported.
Optimal location: reef construction with medium current.

9.3 Why are some anemones colorful, others rather pale?

Healthy host anemones have 2 different types of coloration:

- Brown coloration due to healthy and functional, zooxanthellae.
- Color pigmentation
  (Target and purpose not yet clearly known, probably protective effect against too bright light).

That is why many host anemones have a brown coloration, while only some have such a strong pigmentation that the anemone appears very colorful.
Colorful animals naturally achieve significantly higher sales prices.
Probably the most common (and popular) color variety is the orange or red bubble anemone (E. quadricolor).

However, there are also colorful specimens of all other host anemones.

9.4 Danger to humans?

Although anemone nettling is not usually felt through the thick skin of fingers and hands , it can be felt on the inside of arms, or other places where the skin is thin.
Some people are allergic to the stinging venom of anemones. Aquarium gloves provide a remedy. The anemones with the strongest stinging power are carpet anemones.

In case you have been nettled and are in pain, soothe it with a cloth soaked in vinegar. Put it on the affected area for 15 minutes. Then rinse with water.

Another source of danger is the removal or insertion of the anemone. In the process, anemones sometimes spray their stinging venom.

Wear protective goggles to avoid this risk!

In addition to the immediate measure "intensive rinsing of the eye", a visit to the ophthalmologist/eye clinic is recommended.

9.5 Do anemonefish feed your anemone?

Yes, they do. Suspected cause is the care of their own host anemone, which they defend against other tank inhabitants and also now and then against the keeper.

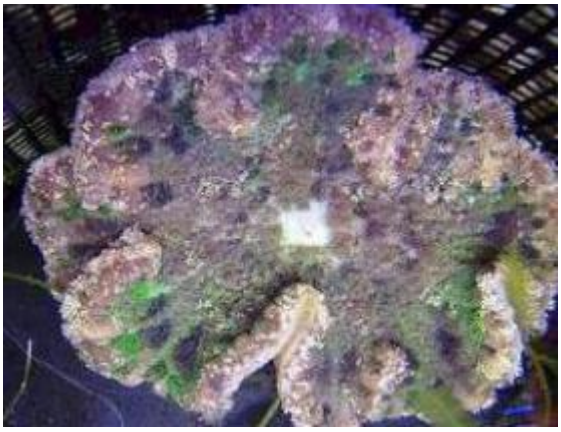
Part 10 - Species guide

10.1Cryptodendrum Adhaesivum (Dimpled rim anemone or pizza anemone)

Expected size:	30 cm
Posture difficulty:	very difficult
Nettle risk:	high
Hazard potential for fish, shrimp, ...	high

Reproduction	Nature: Sexual, dividing and cutting off small offshoots Aquarium: Not known.
Available as offspring	No, generally poorly available
Recommended tank size	200 liters and larger
Preferred food	Separate feeding recommended (Artemis, Mysis)
Habitat	substrate/sand light to medium current, high light intensity
Identification/Features	Interesting color variations, multiple colorations. Very short densely arranged tentacles. Very high adhesive strength. Attacks on careless/sick tank inhabitants.



10.2 Entacmaea quadricolor (Bubble tip anemone, copper anemone)

Expected size:	40 cm
Posture difficulty:	 easy/average
Nettle risk:	 medium-high
Hazard potential for fish, shrimp, ...	 low

Reproduction	Nature: Aquarium:	Sexual, division and cutting off small offshoots Division (frequent), as well as by deliberate cutting up.
Available as offspring	Yes, good availability, also from private sources	
Recommended tank size	from 200 liters	
Preferred food	no separate feeding necessary/recommended	
Habitat	attaches itself in the reef structure, mostly in the middle/lower area prefers medium current and medium light intensity	
Identification/Features	Easiest to maintain host anemone, very resistant-/regenerative in case of injuries. Tentacles not always in bubble form 3 color forms (red, red-orange, green) as well as mixed colors	


Foto: Brian Smith


Foto: Robert Baur


Foto: Claude Schuhmacher


Foto: Phil Henderson


Foto: Marina Peters


Foto: Jürgen Tjark


Foto: Eva Grieser

10.3 Heteractis aurora (sand anemone, Glass beads anemone)

Expected size:	50 cm
Posture difficulty:	high
Nettle risk:	medium-high
Hazard potential for fish, shrimp, ...	low

Reproduction	Nature: Aquarium:	Sexual, dividing and cutting off small offshoots No reproduction known.
Available as offspring	No	
Recommended tank size	from 200 liters	
Preferred food	no separate feeding necessary/recommended Supply by zooxanthellae (light)	
Habitat	Attaches itself exclusively in the sand Prefers medium current and strong light intensity	
Identification/Features	Knobbles on the tentacles (like strings of pearls). Migratory. Mostly cream colored, but colored varieties also occur. Orange/red foot.	

10.4 Heteractis crispa (Leather Anemone)

Expected size:	60 cm
Posture difficulty:	high
Nettle risk:	medium-high
Hazard potential for fish, shrimp, ...	low

Reproduction	Nature: Aquarium:	Sexual, dividing and cutting off small offshoots No reproduction known.
Available as offspring	No	
Recommended tank size	from 200 liters	
Preferred food	no separate feeding necessary/recommended Supply by zooxanthellae (light)	
Habitat	Mostly attaches itself to the bottom area or sand Prefers medium current and strong light intensity	
Identification/Features	Up to 15 cm long and thin tentacles, some with purple tips Mostly cream colored, rarely also pink. Unfortunately often colored animals are offered (yellow, orange, ...)	

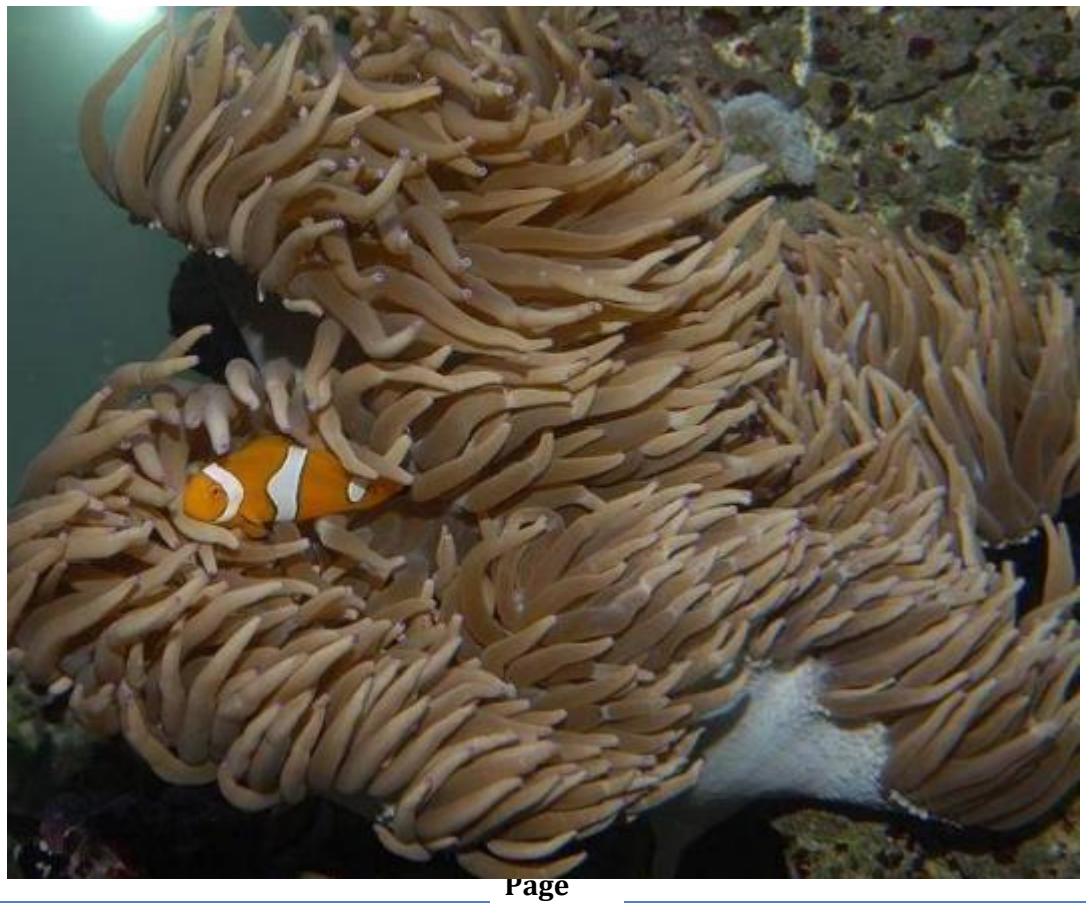








Foto: Ruedi Furter


Foto: Michael Koch

10.5 Stichodactyla haddoni (Carpet Anemone)

Expected size:	60 cm
Posture difficulty:	average
Nettle risk:	very high
Hazard potential for fish, shrimp, ...	high

Reproduction	Nature: Aquarium:	Sexual, division and cutting off small offshoots No reproduction known.
Available as offspring	No	
Recommended tank size	from 400 liters	
Preferred food	Separate feeding recommended (Artemia, Mysis, crushed smelts) because then less aggressive. Supply by zooxanthellae (light).	
Habitat	At the bottom. Best not to place other animals nearby. Prefers medium current and strong light intensity.	
Identification/Features	Many color variations. Very short, densely arranged tentacles. High adhesive strength. Frequent attacks on careless or sick animals. Rapid growth.	


Foto: Phil Henderson


Foto: Marina Peters


Foto: Marina Peters


Foto: Marina Peters

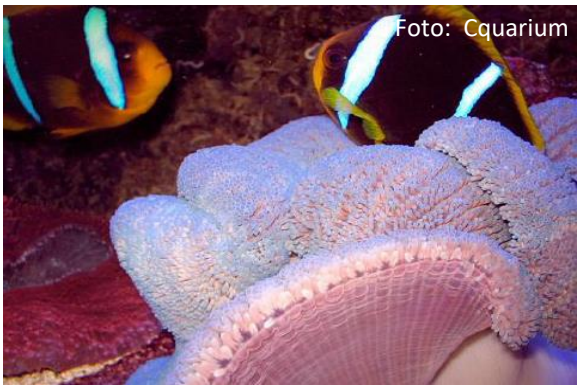


Foto: Cquarium

10.6 Stichodactyla gigantea (Giant Anemone)

Expected size:	60 cm
Posture difficulty:	very difficult!
Nettle risk:	medium-high
Hazard potential for fish, shrimp, ...	minimal

Reproduction	Nature: Aquarium:	Sexual, division and cutting off small offshoots No reproduction known.
Available as offspring	No, is also offered only very rarely	
Recommended tank size from	400 liters	
Preferred food	No separate feeding necessary/recommended. Supply by zooxanthellae (light).	
Habitat	Attaches to the bottom or under rocks. Prefers very strong current and strong light intensity.	
Identification/Features	Tentacles 1-2cm long. Mostly cream colored but also color variations. Most difficult anemone to keep. Makes high demands on water quality, current etc.	


Foto: Greg Peterson


Foto: Tony Slotboom


Foto: Greg Peterson


Foto: Phil Henderson


Foto: Gary Majchrzak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10.7 Heteractis magnifica (red-footed anemone)

Expected size:	70 cm
Posture difficulty:	very difficult
Nettle risk:	medium-high
Hazard potential for fish, shrimp, ...	minimal

Reproduction	Nature: Aquarium:	Sexual, division and cutting off small offshoots Division (rare).
Available as offspring	Yes but rare. Mostly animals taken from reefs are on the market	
Recommended tank size	from 400 liters	
Preferred food	No separate feeding necessary/recommended. Supply by zooxanthellae (light).	
Habitat	Usually attaches itself to the very top of the reef structure Prefers medium to strong current and very strong light intensity	
Identification/Features	Many, medium length tentacles. Migratory. Climbs even over glass. Best place: reef pillar. Fast growth. No beginner animal!	


Foto: Gary Majchrzak


Foto: Marina Peters


Foto: Tony Slotboom


Foto: Greg Peterson


Foto: Marc Kleinnießen

10.8 Heteractis malu (Hawaian Anemone)

Expected size: 60 cm

Posture difficulty: difficult

Nettle risk: medium-high

Hazard potential for fish, shrimp, ... minimal

Reproduction	Nature: Aquarium:	Sexual, dividing and cutting off small offshoots No reproduction known.
Available as offspring	No	
Recommended tank size	200 liters and larger	
Preferred food	No separate feeding necessary/recommended. Supply by zooxanthellae (light).	
Habitat	Attaches mostly to the bottom, rarely under rocks. Prefers light to medium current and strong light intensity.	
Identification/Features	Relatively small number of short tentacles. Especially few of them around the mouth disc. Unfortunately often colored or bleached animals are offered.	


Fotos: Cquarium

10.9 Macrodactyla doreensis (Corkscrew anemone)

Expected size:	30 cm	
Posture difficulty:		difficult
Nettle risk:		medium-high
Hazard potential for fish, shrimp, ...		minimal

Reproduction	Nature: Aquarium:	Sexual, dividing and cutting off small offshoots No reproduction known.
Available as offspring	No	
Recommended tank size	200 liters and larger	
Preferred food	No separate feeding necessary/recommended. Supply by zooxanthellae (light).	
Habitat	Attaches mostly to the bottom, rarely under rocks. Prefers light to medium current and strong light intensity.	
Identification/Features	Relatively long tentacles. Sometimes corkscrew-like in shape. Various color variations (bright green, purple, pink).	

10.10 Stichodactyla mertensii (Merten's Anemone)

Expected size:	> 100 cm
Posture difficulty:	difficult
Nettle risk:	medium-high
Hazard potential for fish, shrimp, ...	minimal

Reproduction	Nature: Sexual, division and cutting off small offshoots Aquarium: No reproduction known.
Available as offspring	No. Is offered only very rarely.
Recommended tank size	from 400 liters
Feeding	Feeding "now and then" recommended (Artemia, Mysis, small smelts) Supply by zooxanthellae (light).
Habitat	In the lower part of the reef rock. Rarely also at the bottom. Prefers medium to strong current and strong light intensity.
Identification/Features	Tentacles 1-2cm and varying in length. Tentacles shine through on underside as knobs. Mostly cream colored. Color morphs rare. Recommended for species tanks only

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