

WORLD SCIENCE FESTIVAL CORAL REEF DECK – PRINT VERSION

RELEASE DATE: JUNE 25, 2012

THIS DOCUMENT INCLUDES 1 PAGE SPECIAL CORAL REEF INSTRUCTIONS, 9 PAGES OF CARDS (54 PHYLO CARDS) AND 1 CARD BACK PAGE (11 PAGES TOTAL)

NOTE THAT CARD SIZE IS IDENTICAL TO THAT OF POKEMON CARDS (62 mm x 87 mm or 2 7/16 inches x 3 7/16 inches).

WE RECOMMEND PRINTING THESE CARDS, IN COLOUR, ON 65LB+ WHITE CARD STOCK.

USING CARD SLEEVE PROTECTORS (~64mm x 89mm) OR LAMINATING CARDS WILL ALSO GREATLY ENHANCE THE FEEL OF THE CARDS.

FOR MORE CARDS, GAME RULES, AND GENERAL INFORMATION ABOUT THE PHYLO PROJECT, PLEASE GO TO:

<http://phylogame.org>



The World Science Festival is a production of the Science Festival Foundation, a 501(c)(3) non-profit organization headquartered in New York City. The Foundation's mission is to cultivate a general public informed by science, inspired by its wonder, convinced of its value, and prepared to engage with its implications for the future.

For more information, please visit www.worldsciencefestival.com

WORLD SCIENCE FESTIVAL/CORAL REEF EDITION

In general, coral reef ecosystems consist of plankton living together with corals, with Zooxanthellae playing an especially important role in warmer coral ecosystems. From this basic relationship, many other organisms can also take part in the ecosystem, including algae, fish, crustacea, and sharks. With this game, the purpose is to try and place as many of your species cards on the table, all the while making sure your species cards have something to sustain (feed) them. As well, there are EVENT cards, which can change things up a bit. When these are played, you may find that many of your food chains are disrupted, which may mean the loss of cards and therefore loss of points. Consequently, the Phylo game is all about building these chains, and also seeing how different things can affect them.

CORAL REEF PHYLO RULES (see <http://phylogame.org> for more details)

Place two ZOOXANTHELLAE CARDS in the center. ONE FACING EACH PLAYER.

Each Player picks up 5 cards and put the rest of the cards in a pile called the PICK-UP DECK. Cards that are removed from the game go into a DISCARD PILE.

The two players will take turns. In each TURN, they can pick up a new card and make 3 ACTIONS.

ACTIONS YOU CAN MAKE:

- PLAY a card in your hand onto the table (**make sure you play them facing you**).
- DROP a card in a DISCARD PILE and PICK UP three cards.
- MOVE a card (# of moves is on the card itself). MOVE# tells you how many spots the card can move. Up down left right movement only (no diagonal), and it must end up in a free space.
- You may PASS.

Once all the cards are finished in the PICK UP PILE, and no more moves can be made, pick up all the cards FACING YOU and add up all the points. Person with the most points WIN!

PLAYING A CARD

FOODCHAIN#1 cards can be played anywhere as long as it is placed adjacent to a card with at least 1 temperature and 1 terrain MATCH (this makes it compatible). NOTE that all Coral cards are OCEAN terrain.

FOODCHAIN#2 cards must be placed next to at least 1 compatible FOODCHAIN#1 cards.

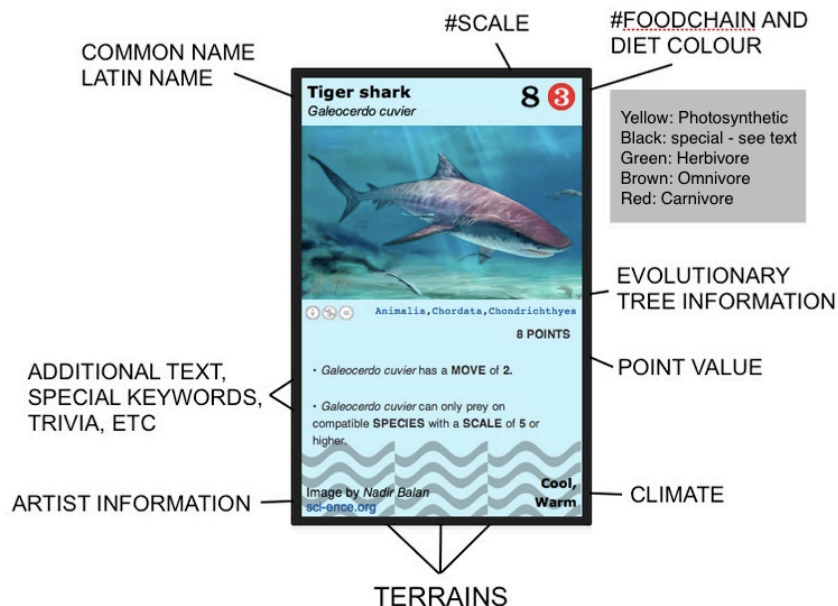
FOODCHAIN#3 cards must be placed next to at least 1 compatible FOODCHAIN#2 cards. Usually, FOODCHAIN#3 cards are carnivores (meat-eating): unless specified on card, this also means that it can only be played next to prey of equal or smaller SCALE.

Note that there are exceptions to these general placement rules. For example, omnivores (brown circle) are FOODCHAIN#3 but can technically be played next to plants of FOODCHAIN#1. Other exceptions may be highlighted in the card text.

In general, whether a card can be played (or needs to be discarded) depends on whether it is next to something that can sustain it. Also NOTE that it's o.k. to place your card next to opponent's cards.


Yellow = Photosynthesis
 Green = Herbivore (eats plants)
 Brown = Omnivore (eats plants and animals)
 Red = Carnivore (eats animals)
 Black = "special" usually described on the card

When an EVENT card is played, unless specified differently, the effect is immediate and then the EVENT card is removed from the table (into discard pile). Sometimes, the effect will result in broken food chains. Here, the opposing player has their next TURN to react to the EVENT card, before disconnected cards are removed (i.e. they can play a substitute card to replenish the food chains, or they can move cards to areas on the table that provide compatible linkage.



Brain Coral
Diploria strigosa
Animalia, Cnidaria, Anthozoa

6 2



6 POINTS


- *Acropora millepora* is a **WARM WATER CORAL SPECIES**.
- *Acropora millepora* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Nadir Balan

WARM

Brain Coral
Diploria strigosa
Animalia, Cnidaria, Anthozoa

6 2



6 POINTS

- *Acropora millepora* is a **WARM WATER CORAL SPECIES**.
- *Acropora millepora* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Nadir Balan

WARM

Maiden's Hair
Chlorodesmis fastigiata
Plantae, Chlorophyta, Bryopsidophyceae

5 1



3 POINTS

- *Chlorodesmis fastigiata* is an **ALGAE** and **PLANKTON SPECIES**.
- *Chlorodesmis fastigiata* is **OPPORTUNISTIC** and may be played on top of other **PLANKTON** cards (discard other **PLANKTON** card).

Image by Nadir Balan

WARM

Brown Macroalgae
Sargassum spp.
Chromalveolata, Heterokontophyta, Phaeophyceae

8 1



3 POINTS


- *Sargassum spp.* is an **ALGAE** and **PLANKTON SPECIES**.

Image by Emilie Clark

COOL WARM

Coralline Algae
Porolithon spp.
Archaeplastida, Rhodophyta, Rhodophyceae

4 1



3 POINTS

- *Porolithon spp.* is an **ALGAE** and **PLANKTON SPECIES**.

Image by Emilie Clark

COOL WARM

Cyanobacteria
Prochlorococcus spp.
Bacteria, Cyanobacteria, Prochlorococcaceae

1 1



2 POINTS

- *Prochlorococcus spp.* is a **PLANKTON SPECIES**.

Image by Emilie Clark

COOL WARM HOT

Venus Sea Fan
Gorgonia flabellum
Animalia, Cnidaria, Anthozoa

6 **2**



6 POINTS


- *Gorgonia flabellum* is a **WARM WATER CORAL SPECIES**.
- *Gorgonia flabellum* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Joe Kloc

WARM

Venus Sea Fan
Gorgonia flabellum
Animalia, Cnidaria, Anthozoa

6 **2**



6 POINTS

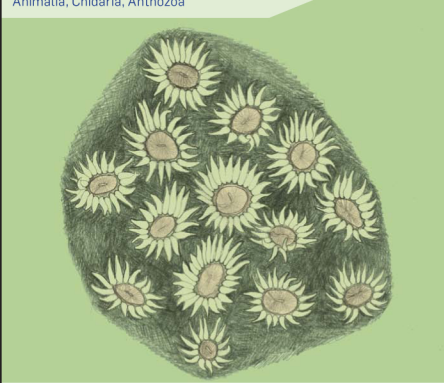
- *Gorgonia flabellum* is a **WARM WATER CORAL SPECIES**.
- *Gorgonia flabellum* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Joe Kloc

WARM

Star Coral
Monastrea cavernosa
Animalia, Cnidaria, Anthozoa

7 **2**



6 POINTS


- *Monastrea cavernosa* is a **WARM WATER CORAL SPECIES**.
- *Monastrea cavernosa* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Jenny Mürtzell

WARM

Star Coral
Monastrea cavernosa
Animalia, Cnidaria, Anthozoa

7 **2**



6 POINTS


- *Monastrea cavernosa* is a **WARM WATER CORAL SPECIES**.
- *Monastrea cavernosa* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Jenny Mürtzell

WARM

Staghorn Coral
Acropora millepora
Animalia, Cnidaria, Anthozoa

7 **2**



6 POINTS


- *Acropora millepora* is a **WARM WATER CORAL SPECIES**.
- *Acropora millepora* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Emilie Clark

WARM

Staghorn Coral
Acropora millepora
Animalia, Cnidaria, Anthozoa

7 **2**




6 POINTS

- *Acropora millepora* is a **WARM WATER CORAL SPECIES**.
- *Acropora millepora* is a **SUSPENSION FEEDER**, and must be played adjacent to at least 1 **ZOOXANTHELLAE PLANKTON SPECIES**.

Image by Emilie Clark

WARM

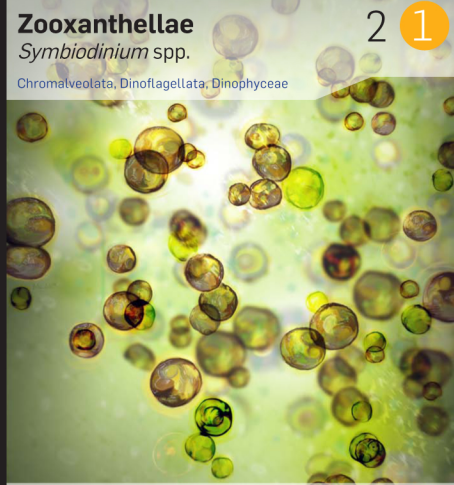
Diatom
Chaetocerus decipiens 3 1
 Chromalveolata, Heterokontophyta, Bacillariophyceae



3 POINTS
 • *Prorocentrum* spp. is a PLANKTON SPECIES.

Image by Melissa Guion COOL WARM


Zooxanthellae
Symbiodinium spp. 2 1
 Chromalveolata, Dinoflagellata, Dinophyceae



3 POINTS
 • ZOOXANTHELLAE is a PLANKTON SPECIES.
 • ZOOXANTHELLAE must be present to play WARM WATER CORAL SPECIES(SYMBIOTIC relationship).

Image by Nadir Balan COOL WARM

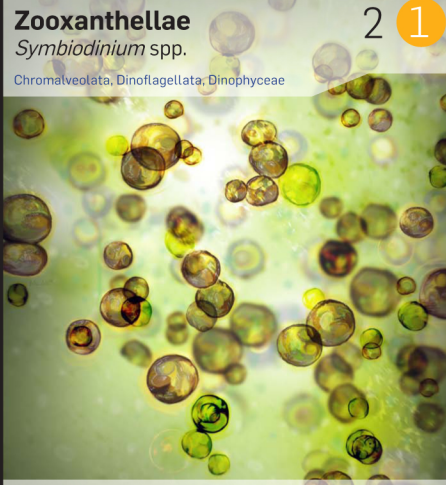
Zooxanthellae
Symbiodinium spp. 2 1
 Chromalveolata, Dinoflagellata, Dinophyceae



3 POINTS
 • ZOOXANTHELLAE is a PLANKTON SPECIES.
 • ZOOXANTHELLAE must be present to play WARM WATER CORAL SPECIES(SYMBIOTIC relationship).

Image by Nadir Balan COOL WARM

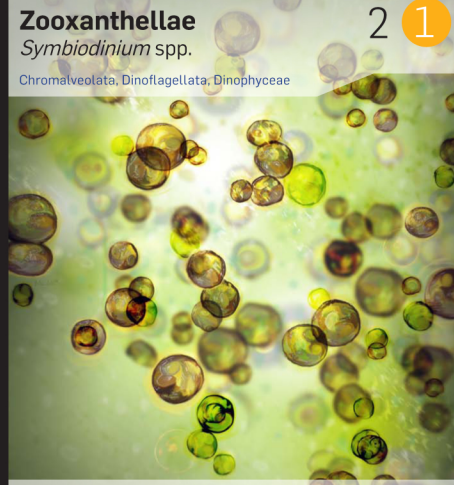
Zooxanthellae
Symbiodinium spp. 2 1
 Chromalveolata, Dinoflagellata, Dinophyceae



3 POINTS
 • ZOOXANTHELLAE is a PLANKTON SPECIES.
 • ZOOXANTHELLAE must be present to play WARM WATER CORAL SPECIES(SYMBIOTIC relationship).

Image by Nadir Balan COOL WARM

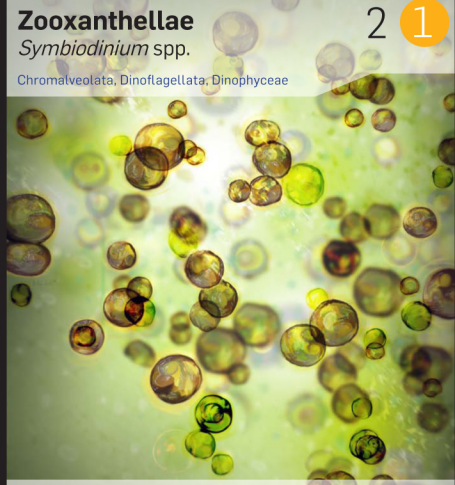
Zooxanthellae
Symbiodinium spp. 2 1
 Chromalveolata, Dinoflagellata, Dinophyceae



3 POINTS
 • ZOOXANTHELLAE is a PLANKTON SPECIES.
 • ZOOXANTHELLAE must be present to play WARM WATER CORAL SPECIES(SYMBIOTIC relationship).

Image by Nadir Balan COOL WARM

Zooxanthellae
Symbiodinium spp. 2 1
 Chromalveolata, Dinoflagellata, Dinophyceae



3 POINTS
 • ZOOXANTHELLAE is a PLANKTON SPECIES.
 • ZOOXANTHELLAE must be present to play WARM WATER CORAL SPECIES(SYMBIOTIC relationship).


Image by Nadir Balan COOL WARM

Bottom Trawling
Event Card




PLAY: on 1 COLD WATER CORAL SPECIES card, and then discard.
EFFECT: The played CORAL SPECIES card, as well as one other adjacent card of your choice, are discarded immediately.
Image by Jens Auer

Rising Ocean Temperature
Event Card



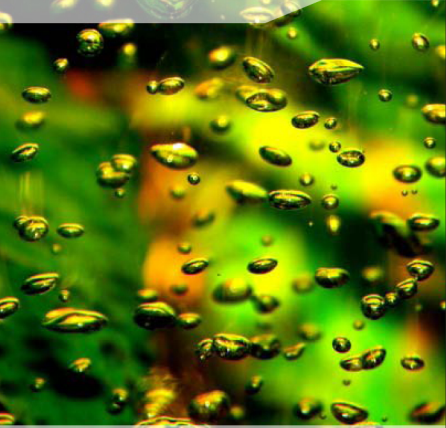
PLAY: on 1 PLANKTON SPECIES card, and then discard.
EFFECT: The played PLANKTON SPECIES card is discarded immediately.
Image by U.S. Fish & Wildlife Service

Rising Ocean Temperature
Event Card



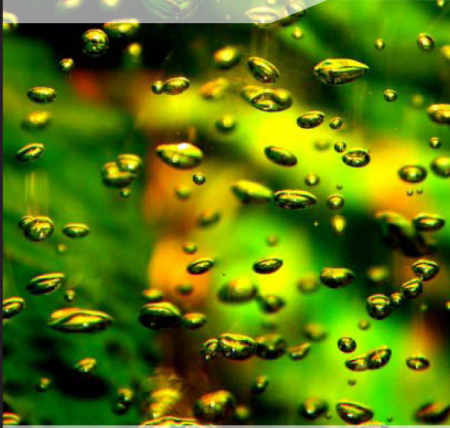
PLAY: on 1 PLANKTON SPECIES card, and then discard.
EFFECT: The played PLANKTON SPECIES card is discarded immediately.
Image by U.S. Fish & Wildlife Service

Ocean Acidification
Event Card



PLAY: on 1 PLANKTON SPECIES card, and then discard.
EFFECT: The played PLANKTON SPECIES card is discarded immediately.
Image by Rachel Macniven

Ocean Acidification
Event Card



PLAY: on 1 PLANKTON SPECIES card, and then discard.
EFFECT: The played PLANKTON SPECIES card is discarded immediately.
Image by Rachel Macniven

HOME



HOME

Bubble-Tip Anemone 5 **2**
Entacmaea quadricolor
 Animalia, Cnidaria, Anthozoa



4 POINTS

- *Entacmaea quadricolor* is a **SUSPENSION FEEDER** and **CARNIVORE** of small animals.
- It must be played adjacent to at least 1 compatible **PLANKTON SPECIES** or 1 compatible crustacea or *actinopterygii* **SPECIES** of **SCALE** 4 or less.

Image by Melissa Guion WARM

Spinyhead Blenny 4 **3**
Acanthemblemaria spinosa
 Animalia, Chordata, Actinopterygii

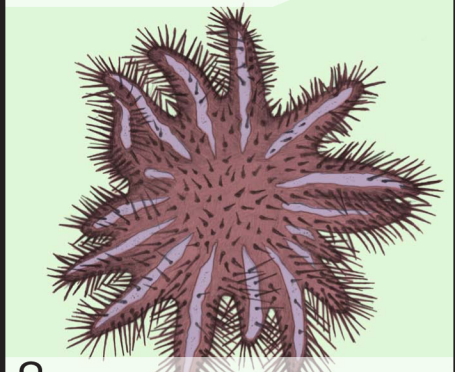


4 POINTS

- *Acanthemblemaria spinosa* has a **MOVE** of 2.
- It must be played adjacent to at least 1 compatible **PLANKTON SPECIES** or 1 compatible crustacea **SPECIES** of **SCALE** 4 or less.

Image by Joe Kloc WARM

Crown of Thorns Starfish 5 **3**
Acanthaster planci
 Animalia, Echinodermata, Asteroidea




8 POINTS

- *Acanthaster planci* must be (played) adjacent to at least 1 compatible **WARM WATER CORAL SPECIES**.
- Or, *Acanthaster planci* is **OPPORTUNISTIC**. Place on top and discard any compatible **WARM CORAL SPECIES**.

Image by Jenny Mörtzell WARM

Whale Shark 9 **2**
Rhincodon typus
 Animalia, Chordata, Chondrichthyes




6 POINTS

- *Rhincodon typus* has a **MOVE** of 2.
- *Rhincodon typus* is a **FILTER FEEDER**, and needs to be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Maki Naro WARM

Bluebell Sea Squirts 4 **2**
Clavelina moluccensis
 Animalia, Chordata, Ascidiacea



5 POINTS

- *Clavelina moluccensis* is a **FILTER FEEDER**, and needs to be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Emilie Clark WARM

Sea Sparkle 2 **2**
Noctiluca scintillans
 Chromalveolata, Dinoflagellata, Noctiluiphyceae



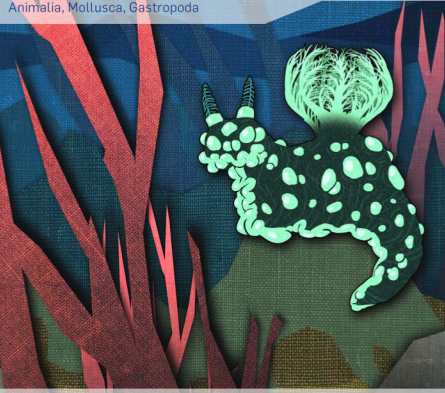
5 POINTS

- The bioluminescence *Noctiluca scintillans* is a **PLANKTON** that feeds off of other **PLANKTON SPECIES**.
- It must be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Joe Kloc COOL WARM

Nudibranch
Nembrotha cristata
Animalia, Mollusca, Gastropoda

4 **3**



9 POINTS


- *Nembrotha cristata* has a **MOVE** of 1.
- *Nembrotha cristata* can only prey on compatible **CORAL** or **SPONGE SPECIES** cards (must be played adjacent to one of these regardless of **SCALE**)

Image by Maki Naro

COOL WARM

Stoplight Parrotfish
Sparisoma viride
Animalia, Chordata, Actinopterygii

5 **3**



5 POINTS

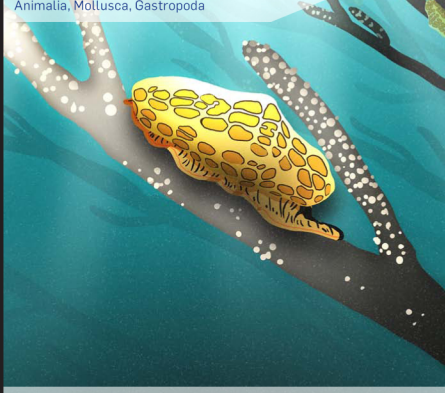
- *Sparisoma viride* has a **MOVE** of 2.
- *Sparisoma viride* eats **ALGAE** and **CORAL**, and must be placed adjacent to at least 1 compatible **ALGAE** or **CORAL** species card (irrespective of **SCALE**).

Image by Melissa Guion

COOL WARM

Flamingo Tongue Snail
Cyphoma gibbosum
Animalia, Mollusca, Gastropoda

4 **3**



9 POINTS


- *Cyphoma gibbosum* has a **MOVE** of 1.
- *Cyphoma gibbosum* eats **CORAL**, and must be placed adjacent to at least 1 compatible **CORAL** species card (irrespective of **SCALE**).

Image by Maki Naro

COOL WARM

Pajama Cardinalfish
Sphaeramia nematoptera
Animalia, Chordata, Actinopterygii

5 **3**



8 POINTS

- *Sphaeramia nematoptera* has a **MOVE** of 2.
- *Sphaeramia nematoptera* can only prey on compatible **SPECIES** with a **SCALE** of 4 or 5.

Image by Melissa Guion

COOL WARM

Feather Duster Worm
Sebellastarte magnifica
Animalia, Annelida, Polychaeta

4 **2**



5 POINTS


- *Sebellastarte magnifica* is a **SUSPENSION FEEDER**, and needs to be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Maki Naro

COOL WARM

Christmas Tree Worm
Spirobranchus giganteus
Animalia, Annelida, Polychaeta

4 **2**



6 POINTS


- *Spirobranchus giganteus* is a **SUSPENSION FEEDER**, and needs to be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Melissa Guion

WARM

Lophelia Coral
Lophelia pertusa
Animalia, Echinodermata, Asteroidea

9 **2**



5 POINTS

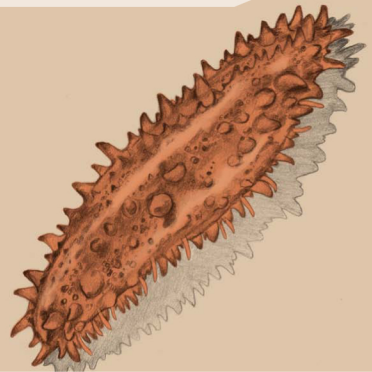
- *Lophelia pertusa* is a **COLD WATER CORAL**.
- *Lophelia pertusa* is a **SUSPENSION FEEDER**, and needs to be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Jenny Mörtzell

COLD COOL

Sea Cucumber
Bohadschia argus
Animalia, Echinodermata, Holothuroidea

5 **3**



3 POINTS

- *Bohadschia argus* has a **MOVE** of 1.
- *Bohadschia argus* is a **SCAVENGER**. If removed due to a consequence of an **EVENT** card, return to your hand.

Image by Jenny Mörtzell

COOL WARM

Spiny Lobster
Panulirus argus
Animalia, Arthropoda, Crustacea

5 **3**



7 POINTS

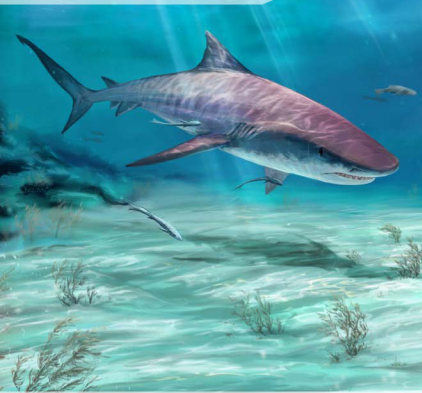
- *Panulirus argus* has a **MOVE** of 1, and can only prey on **SPECIES** with a **SCALE** of 4 or 5.
- *Panulirus argus* is a **SCAVENGER**. If removed due to a consequence of an **EVENT** card, return to your hand.

Image by Joe Kloc

COOL WARM

Tiger Shark
Galeocerdo cuvier
Animalia, Chordata, Chondrichthyes

8 **3**



8 POINTS

- *Galeocerdo cuvier* has a **MOVE** of 2.
- *Galeocerdo cuvier* can only prey on compatible **SPECIES** with a **SCALE** of 5 or higher.

Image by Nadir Balan

COOL WARM

Bigfin Reef Squid
Sepioteuthis lessoniana
Animalia, Mollusca, Cephalopoda

6 **3**



8 POINTS

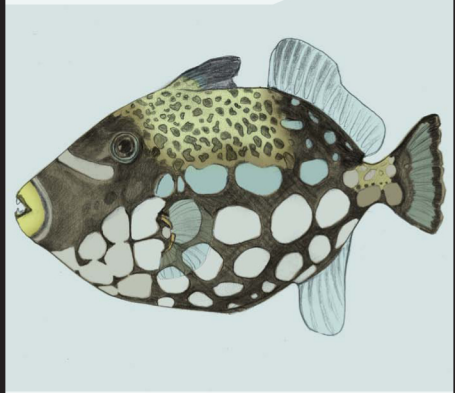
- *Sepioteuthis lessoniana* has a **MOVE** of 2.
- *Sepioteuthis lessoniana* can only prey on compatible crustacea and *actinopterygii* **SPECIES** with a **SCALE** of 4 or higher.

Image by Joe Kloc

COOL WARM

Clown Triggerfish
Balistoides conspicillum
Animalia, Chordata, Actinopterygii

5 **3**




8 POINTS

- *Balistoides conspicillum* has a **MOVE** of 2.
- *Balistoides conspicillum* can only prey on compatible **SPECIES** with a **SCALE** of 4 or 5.

Image by Jenny Mörtzell

COOL WARM


Coral Bleaching
Event Card



PLAY: on 1 **CORAL SPECIES** card, and then discard.
EFFECT: The played **CORAL SPECIES** card is discarded immediately.

Image by Samuel Chow


Coral Bleaching
Event Card



PLAY: on 1 **CORAL SPECIES** card, and then discard.
EFFECT: The played **CORAL SPECIES** card is discarded immediately.

Image by Samuel Chow

Coral Bleaching
Event Card

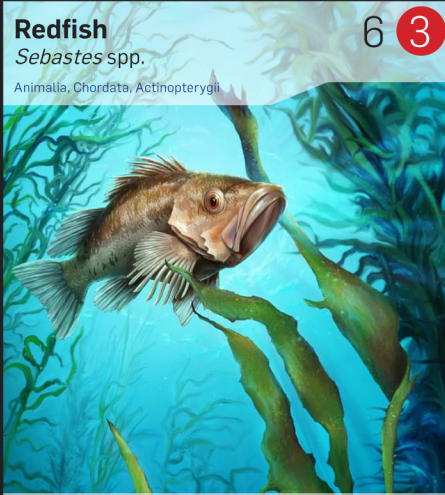


PLAY: on 1 **CORAL SPECIES** card, and then discard.
EFFECT: The played **CORAL SPECIES** card is discarded immediately.

Image by Samuel Chow

Redfish
Sebastes spp.
Animalia, Chordata, Actinopterygii

6 **3**



8 POINTS

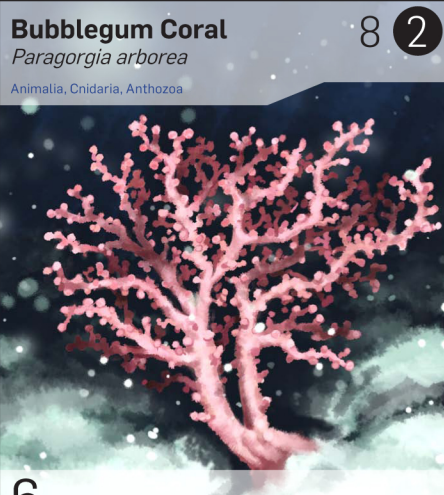
- *Sebastes spp* has a **MOVE** of 2.
- Can only prey on **SPECIES** with a **SCALE** of 4, 5 or 6.

Image by Nadir Balan

COLD COOL

Bubblegum Coral
Paragorgia arborea
Animalia, Cnidaria, Anthozoa

8 **2**



6 POINTS

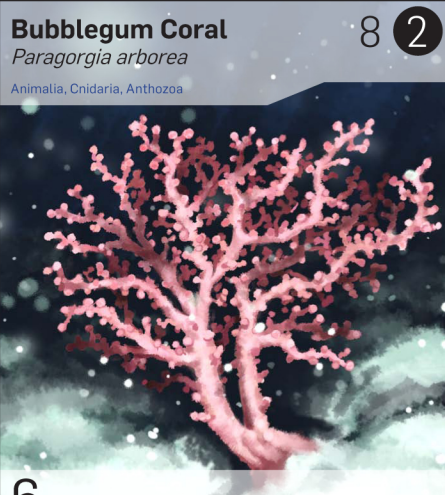
- *Paragorgia arborea* is a **COLD WATER CORAL**.
- *Paragorgia arborea* is a **SUSPENSION FEEDER**, and needs to be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Maki Naro

COLD, COOL

Bubblegum Coral
Paragorgia arborea
Animalia, Cnidaria, Anthozoa

8 **2**



6 POINTS

- *Paragorgia arborea* is a **COLD WATER CORAL**.
- *Paragorgia arborea* is a **SUSPENSION FEEDER**, and needs to be played adjacent to at least 1 compatible **PLANKTON SPECIES**.

Image by Maki Naro

COLD, COOL

Too Many Scuba Divers

Event Card



PLAY: On 1 **WARM WATER CORAL SPECIES** card, and then discard.

EFFECT: The played **CORAL SPECIES** card is discarded immediately.

Image by Richard Ling



WARM

Too Many Scuba Divers

Event Card



PLAY: On 1 **WARM WATER CORAL SPECIES** card, and then discard.

EFFECT: The played **CORAL SPECIES** card is discarded immediately.

Image by Richard Ling



WARM

Algae Takeover

Event Card



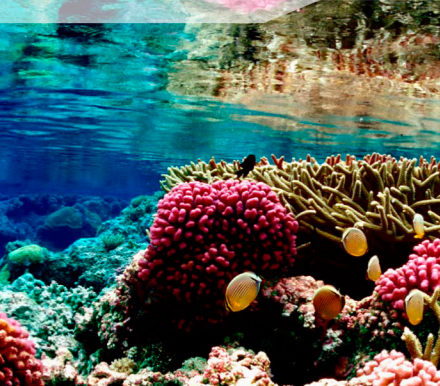
PLAY: can be played for below effect and then discarded.

EFFECT: Use any 1 **ALGAE** card in your hand, OR any 1 **ALGAE** card on the table. Place on top of any compatible **CORAL** card. Discard **CORAL** card: leave **ALGAE** card in its place.

Image by Eutrophication & Hypoxia

**Marine Protected Area**

Event Card



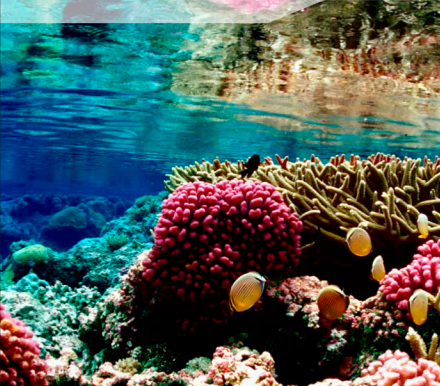
PLAY: You may play this card immediately after your opponent has played an **EVENT** card on one of your **SPECIES**.

EFFECT: Negates the effect of the **EVENT** card. Does not work on **EVENT** cards that are not played specifically on top of a **SPECIES**.

Image by U.S. Fish & Wildlife Service

Marine Protected Area

Event Card



PLAY: You may play this card immediately after your opponent has played an **EVENT** card on one of your **SPECIES**.

EFFECT: Negates the effect of the **EVENT** card. Does not work on **EVENT** cards that are not played specifically on top of a **SPECIES**.

Image by U.S. Fish & Wildlife Service

Coastal Development

Event Card



PLAY: can be played for below effect and then discarded.

EFFECT: Discard any 1 **CORAL SPECIES** card on the table. If you have a compatible **ALGAE SPECIES** card in your hand, you may play it in the open spot.

Image by Adam KR





phylogame.org card back
pattern: suzanne norris | www.sakurasnow.com
logo: haley fiege | www.kingdomofawesome.com

