

**PETITION TO THE SECRETARY
UNITED STATES DEPARTMENT OF AGRICULTURE**

Noxious Weed Listing Petition to Add the Entire Genus *Caulerpa*

Submitted by: International Center for Technology Assessment and Susan Williams, Ph.D.

Date: April 29, 2003

Endorsements: 105 endorsers to-date, including 10 groups and organizations; see attachment.

STATUTORY AUTHORITY

The Federal Plant Protection Act, codified at 7 USC § 7701 *et seq.*, regulates Federal noxious weed (FNW) listings as follows:

- § 7702(10), defines a *noxious weed* as:

- any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment.

- § 7712(f) provides:

(1) Regulations - In the case of noxious weeds, the Secretary may publish, by regulation, a list of noxious weeds that are prohibited or restricted from entering the United States or that are subject to restrictions on interstate movement within the United States.

(2) Petition to add or remove plants from regulation - Any person may petition the Secretary to add a plant species to, or remove a plant species from, the regulations issued by the Secretary under this subsection.

(3) Duties of the Secretary - In the case of a petition submitted under paragraph (2), the Secretary shall act on the petition within a reasonable time and notify the petitioner of the

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final action the Secretary takes on the petition. The Secretary's determination on the petition shall be based on sound science.

BACKGROUND

On December 4, 1998, APHIS published in the Federal Register (63 FR 67011-67014, Docket No. 98-063-1), a proposal to amend the FNW regulations by adding *Caulerpa taxifolia* (Mediterranean clone)" (hereinafter, MC) to the list of aquatic weeds in 7 CFR § 360.200(a). On March 16, 1999, APHIS finalized this listing in a published rule (64 FR 12881-12884, Docket No. 98-063-2).

By separate petition dated April 30, 2003, Petitioners seek a change in the current FNW listing of *C. taxifolia* to explicitly cover the whole species on the grounds that the limitation in the listing to the "Mediterranean clone" is arbitrary and unenforceable, and violates APHIS's own FNW regulations. Here, Petitioners more broadly request APHIS to list the entire *Caulerpa* genus to provide full and adequate protection to U.S. environmental and economic interests.¹

ARGUMENT IN SUPPORT OF PETITION

Biological realities support listing the entire genus

Factual support for listing the entire genus is in the appended Affidavit of Susan Williams, Ph.D., which, together with its attachments, is incorporated into this Petition by reference.² Dr. Williams, the Director of the Bodega Marine Laboratory and a Professor at the University of California at Davis, is a leading *Caulerpa* expert. She states, in pertinent part:

Species of Caulerpa are some of the most difficult seaweeds to identify, either by morphology or current molecular (DNA) methods (Olsen et al. 1998).... The genus Caulerpa is known as one of the most morphologically variable, with morphology strongly influenced by the environment (Taylor 1972; Carruthers et al. 1993, Meinesz et al. 1995, Ceccherelli and Cinelli 1999, Collado-Vides and Robledo 1999.)

¹ Note that approval of the present petition would make the other petition to list the whole *Caulerpa taxifolia* species redundant.

² The same Affidavit of Dr. Williams also is submitted in support of the other petition.

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Caulerpa cupressoides, as an example, has at least 9 varieties, one of which can be mistaken for *C. taxifolia* (*C. cupressoides* var. *lycopodium*). *Caulerpa taxifolia* is very similar to *C. scalpelliformis* from Australia and the Mediterranean, another species reported to be invasive (Davies et al. 1997). In the Mediterranean, morphs intermediate between *C. taxifolia* and *C. mexicana* were confused and debated (the 'taxmex' morph), to the detriment of taking efforts to eradicate *C. taxifolia* (Olsen 1997). In the past, *C. mexicana* was once considered the same as *C. taxifolia*, indicating how similar the species can appear (Taylor 1972).

All *Caulerpa* species have the capacity to be invasive because of their phenomenal growth rates (up to 3"/day) and their ability to regenerate from very small fragments, even when buried (Williams et al. 1985, Smith and Walters 1999). Other species in addition to *Caulerpa taxifolia* have become invasive. Examples include *C. racemosa* in the Mediterranean (Olsen et al. 1998, Ceccherelli et al. 2000, Piazzzi et al. 2001, Dr. Enrico Sala, Scripps Inst. Oceanography, pers. comm.), *C. scalpelliformis* (Davis et al. 1997), as well as already very harmful invasions of *C. verticillata* in the Florida Keys (Science News, Vol. 157:373, 6/10/00), and *C. brachypus*, also in the Florida Keys (Drs. Mark Littler and Steven Murray, pers. com.) and on reefs off the Palm Beaches and Treasure Coast (Lazaroff 2003). In a replicated experimental study in two different habitat types, *Caulerpa racemosa* completely covered the habitat within 6 months after introduction, overgrowing native seaweeds within 4 months (Piazzzi et al. 2001).

In short, all species in the genus are potentially invasive; several species (*C. brachypus*, *racemosa*, *scalpelliformis*, and *taxifolia*) already are documented to have caused harmful invasions in this country or elsewhere.³ Additionally, members of the genus are so morphologically variable and difficult to reliably distinguish that it is unsafe to continue the import trade in the genus. The genus as a whole poses invasiveness risks, but many species have not been fully studied or characterized until after-the-fact of an invasion. No one can predict when and where, but future invasions in U.S. waters are likely to occur if the trade continues.

³ Some *Caulerpa* occurs as a native in portions of Hawaii, the Florida keys, and elsewhere in U.S. waters, but nothing in the Plant Protection Act prohibits the listing of a globally distributed seaweed that occurs in small portions of the United States. The definition of weed in § 7702(10), above, is broad and inclusive, without reference to being of exclusively non-U.S. origin. Under § 7712(f)(1), above, the effect of a listing is not to require the seaweed's elimination, rather it is to prohibit further import and interstate movement.

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Future invasions leading to widespread monocultures of various *Caulerpa* species could destroy the attractiveness of U.S. marine areas for diving, fishing, and other activities, as the *C. taxifolia* invasion already has in the Mediterranean Sea. Native species would be at risk of being outcompeted and literally covered up and extirpated. APHIS has an obligation under the Plant Protection Act to stop this from happening. Only a proactive approach will succeed.

Enforcement realities support listing the entire genus

It is not practically feasible for enforcement officials to try to exclude just the well-documented invaders in the genus, as they lack the sophisticated knowledge needed to reliably identify this morphologically variable genus down to the species level. This was illustrated in an enforcement situation in California, documented in the attached 10 page fax transmission from the California Department of Food and Agriculture (CDFA), Pest Exclusion Branch.⁴

The information shows the permitted shipment of many boxes of aquarium products from the Indonesian company CV. Cahaya Baru to the Martinez, California, company Salt Water Connection. Unspecified "Caulerpa Spec." appears on the invoice six times, as well as several instances of *Caulerpa sertularioides*, despite its being banned in California, and *Caulerpa racemosa*, also banned in California. "Caulerpa Spec." could have included the Federally banned strain of *C. taxifolia* (Mediterranean clone), but the whole shipment was passed nonetheless; as shown on the cover page and the stamps on page 3, it was released by USDA APHIS PPQ and the U.S. Fish and Wildlife Service on the date of arrival, 10-24-01.

The reason these documents came to Petitioners' attention is because Dr. Williams was called by CDFA officials. They reportedly were upset that the shipment had been released by the Federal border officials despite the clear presence of State-prohibited species and the potential for the "Caulerpa spec."-labeled items to be *C. taxifolia* or other State-prohibited species (S. Williams, pers. comm.). Further, the CDFA officials sought Dr. Williams' taxonomic expertise because they lacked confidence in their ability to identify whether retail stores were selling the prohibited species.

The CDFA faxed documents show that some importers do not distinguish among *Caulerpa* species when they import, label and sell their products. As further example of this, the commercial website of a leading wholesaler of aquarium products, Quality Marine, shows numerous different products, likely representing different species, sold as "*Caulerpa* sp." (see www.qualitymarineusa.com/inverts/plants.html printout attached to the Williams Affidavit). This also illustrates the trade practice of frequently importing and

⁴ These documents were obtained from CDFA; they are submitted here for illustrative regulatory purposes only.

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selling the genus on “live rock.” That is, the seaweed is sold on imported rocks, often cryptically as tiny pieces in crevices in the rock, and then it grows out later in the purchaser’s aquarium. This practice intensifies the species identification problem as inspectors cannot necessarily see the live material clearly.

Also attached to the Williams Affidavit is a 2001 survey of San Diego and Orange county aquarium and pet shop owners, which indicates that the responding employees of stores that sold *Caulerpa* products did not know which particular species they were selling. A separate, as yet unpublished, study by a student with adequate training to do identification has found that at least 10 different species of *Caulerpa* in fact are being sold in Los Angeles aquarium and pet shops, many of them on live rock (S. Williams, pers. comm.).

Put simply, even the well-documented invaders in the genus can be readily imported and sold under the generic name. Common sense says that the whole genus must be listed to stop further invasions. The live rock trade in particular is a very risky pathway.

Because of these problems, it is reasonably foreseeable that the prohibited *C. taxifolia* strain is being imported now under the cover of the generic name in violation of the current APHIS FNW listing and as a result, according to Dr. Williams “there is a risk of re-introducing it to California’s waters.” This is a completely unacceptable risk considering that millions of dollars are being spent to attempt to eradicate the species in two separate locations, infestations that very likely originated from hobbyists who dumped unwanted home aquaria into public waters or cleaned out their aquaria near a storm drain. Similar future introductions of *C. taxifolia* and other harmful members of the genus must be stopped by all reasonable regulatory means.

The entire genus may be legally listed

As Dr. Williams states, the various species that comprise the *Caulerpa* genus pose risks of invasion that merit listing the whole taxon. APHIS’s noxious weed list includes other potentially harmful genera, such as *Homeria* spp., *Striga* spp., and several other parasitic genera. Thus, FNW precedents exist for APHIS to forego a species-by-species approach. Further, as indicated above, the ongoing commercial trade in unspecified “*Caulerpa* spp.” provides a pathway that can hide trade in even the well-documented harmful species, particularly when sold cryptically in live rock. Trade in the genus threatens direct and indirect injuries to U.S. natural resources and environmental interests within the meaning of the Plant Protection Act, § 7702(10), quoted above, so as to justify listing the genus to prevent the threats.

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The present petition also fits well with the more proactive national invasives policy declared in the Management Plan adopted in 2001 by the National Invasive Species Council, including USDA, pursuant to Executive Order 13112. The “Prevention” chapter of the Plan (p. 31), states:

Another line of attack is to identify high-risk invasive species not yet established, the likely pathways for their entry, and then management of the pathways to prevent introduction.

Again, the pathway in need of more strict management here is the commercial import and interstate commerce in high-risk *Caulerpa* products that cannot be readily identified to the species level.

CONCLUSION

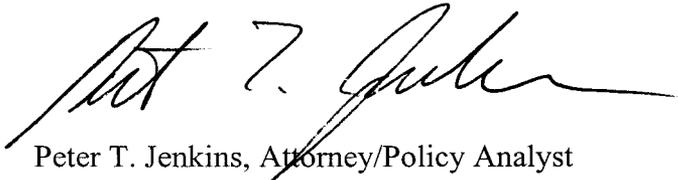
The genus *Caulerpa* meets the specifications of a noxious weed under APHIS’s own “Pest Risk Analysis Guidelines for Qualitative Assessments.” Under Petitioners’ analysis, the genus receives high scores in almost every applicable risk category in the guidelines, scoring highest in the “environmental impact” and “likelihood of introduction and spread” categories.

In view of the evidence and arguments, APHIS should list the entire genus. No vital interest is served by continuing this trade pathway. Its overall value is minor and alternative, less-threatening, aquarium vegetation is available. On the other hand, vital ecological and economic interests will be damaged, perhaps irrevocably, if further *Caulerpa* invasions occur in California waters and elsewhere. Without a strict preventative approach, more invasions by various *Caulerpa* species are foreseeable. Petitioners urge USDA to act soon or else it will, according to Dr. Williams, be “courting ecological and economic invasive species disasters.”

Petitioners look forward to your earliest formal response. The statute calls for a response based on “sound science” within “reasonable time,” which, given the risks of inaction, we will assume to be no more than 120 days from the date of this Petition. Please promptly publish notice of this Petition in the Federal Register and create a formal open docket for it and communicate that to us. For further information, please contact me at 202.547.9359 or email: peterjenkins@icta.org.

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Respectfully submitted on behalf of Petitioners,

A handwritten signature in black ink, appearing to read "Peter T. Jenkins". The signature is fluid and cursive, with a long horizontal stroke at the end.

Peter T. Jenkins, Attorney/Policy Analyst
International Center for Technology Assessment
660 Pennsylvania Ave. SE, Suite 302
Washington, DC 20003

Attachments

List of Petition Endorsers

California Dept. of Food and Agriculture, Pest Exclusion Branch, fax transmission, with cover sheet dated Oct. 30, 2001, from Courtney Albrecht to Susan Ellis (10 pages)

Affidavit of Susan L. Williams, Ph.D., dated Feb. 19, 2003.

FAX TRANSMISSION

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
PLANT HEALTH AND PEST PREVENTION SERVICES
PEST EXCLUSION BRANCH



California Department of Food and Agriculture

1220 N Street, Room A-372
Sacramento, CA 95814
Phone (916) 653-1440
Fax (916) 654-0986

To: Susan Ellis
653-8256

Date: 10-30-03

Fax #: _____
From: Courtney Albrecht

Pages: 10 including this cover sheet

COMMENTS:

Please find:

- ① Contact Info for "Salt Water Connection"
- ② USDA / Fish & Wildlife Release Notice
- ③ Seven-page invoice w/ Caulerpa species w/ asterisk.

Thanks.

Courtney

PLEASE TAKE NOTICE

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CS 3-8250

California Department of Food and Agriculture
Pest Exclusion Branch
185 Berry Street, Suite 200A
San Francisco, CA 94107
(415) 243-0563 FAX (415) 243-8358

P. 1

FAX COVER SHEET

DATE: 10/30/01
TO: Courtney
FAX #: 916-651-6664
FROM: Steph
PAGES (including cover sheet): 11
COMMENTS:

The asterisk'd items were highlighted by John Hantos for me as species of Caulerpa. He also highlighted Rhodimenia spp. Let me know if there's anything else you need.

Steph



SALT WATER CONNECTION
Wholesale Importers of Tropical Marine Fish
John Hantos
Owner/General Manager
825 Arnold Drive, #8 • Marina, CA 94553
Telephone: (925) 370-2220 • FAX: (925) 370-2224
Email: s.connection@worldnet.att.net

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OCT-30-01 TUE 11:36 AM CDFA PEST EXCLUSION S F FAX NO. 415 243 8358

P. 2

DEPARTMENT OF THE TREASURY
UNITED STATES CUSTOMS SERVICE

Form Approved
OMB No. 1515-0069

PERISHABLE

PERISHABLE

ENTRY/IMMEDIATE DELIVERY

C28-0253560-2

CF 228 (042002)

10 CFR 142.3, 142.16, 142.22, 142.24

1. ENTRY DATE 10-24-01	2. PLACED IN ENTRY DATE 10-24-01	3. ENTRY TYPE CODE/NAME 01	4. ENTRY NUMBER C28-0253560-2
5. LIMIT TRANS BOND 2801	6. CONSIGNEE NUMBER SAME	7. BROKER/IMPORTER FILE NUMBER	8. IMPORTER NUMBER 563-19-2518
9. ENTRY NAME JOHN HANTOS D.B.A. SALT WATER CONNECTION 825 ARNOLD DR.#8 MARTINEZ, CA. 94553		11. IMPORTER OF RECORD NAME	
10. QUANTITY SQ	12. WEIGHT 7982	13. LOCATION OF GOODS-CODES Z-581	
14. COUNTRY OF ORIGIN 40	15. MANUFACTURER NUMBER	16. G.O. NUMBER	17. DUTY VALUE \$2,499.00
18. PARTIAL QUANTITY 2801	19. PARTIAL QUANTITY		

LIVE TROPICAL MARINE FISH

20. HTS NUMBER AWB# 618-2765 7512	21. VARIETY QUANTITY 39 BOXES	22. H.S. NUMBER 0301.10.0000	23. ID	24. MANUFACTURER NO. IDCVCAH15JAK
<p>RELEASED SAN FRANCISCO, CA USDA, ADHIS, PPO ADDCEN 10/24/01</p>				

27. CERTIFICATION

28. CUSTOMS USE ONLY

I make application for entry/immmediate delivery. I certify that the above information is accurate, the bond is sufficient, valid, and that all requirements of 10 CFR Part 142 have been met.

OTHER AGENCY ACTION REQUIRED, NAME: **U.S.D.A. MAY NEED TO REVIEW!**
CAULEY

CUSTOMS EXAMINATION REQUIRED

ENTRY REJECTED, BL

9250370-2220

10-24-01

OFFICER OR OTHER GOVT. AGENCY USE

FISH & WILDLIFE SERVICES

RELEASED

CLEARED

DELIVERY AUTHORIZED: **LS 40189** 10/24/01

Statement Required by 10 CFR 1320.21: The estimated average burden associated with this collection of information is 78 minutes per respondent or respondent organization on an individual basis and questions for instructions should be directed to: Customs Service, Paperwork Management Branch, Washington, DC 20229, or the Paperwork Reduction Project (1515-0069), Office of Management and Budget, Washington, DC 20503.

OCT-30-01 TUE 11:37 AM CDFA PEST EXCLUSION S F FAX NO. 415 243 8358

P. 3

CV. CAHAYA BARU

Jl. Cepak No. 15 (Raya Kodam Bintaro) Jakarta 12220-INDONESIA
 PHONE : 62 21 7342001, 62 21 7341636, FAX : 62 21 7364258

Consigned to
SALT WATER CONNECTION
 825 ARNOLD DRIVE
 #6 MARTINEZ, CA 94553
 U. S. A.

Invoice No.
 Date of Shipment
 AWB no.

BOX	CODE	COMMON NAME	SCIENTIFIC NAME	SIZE	QTY	UNIT	AMOUNT
1	E 251	Plate Coral Red	Heliofungia Actiniformis		1	6.00	6.00
	E 251A	Metallic Green Plate Coral	Heliofungia Actiniformis		1	4.00	4.00
	E 251B	Green Plate Coral	Heliofungia Actiniformis		2	3.00	6.00
	E 259	Pearl Coral	Pterogyra Sinuosa	S	1	2.00	2.00
	E 266A	Brain Coral Red	Trachyphyllia Geoffroyi	ML	1	5.00	5.00
	E 266S	Brain Coral Green	Trachyphyllia Geoffroyi	S	2	2.00	4.00
	E 354C	Crystal Coral	Gaussia Fascicularia		2	2.00	4.00
	EP236A	Cladella Soft Coral	Cladella Coll on Scleractinia	ML	1	4.50	4.50
	EP262	Tree Soft Coral	Litophyton Arboreum on scleractinia		2	2.00	4.00
	EP263	Umbrella Soft Coral	Sarcophyton Glaucum on scleractinia		1	2.00	2.00
	EP281	Star Polype	Clavularia Viridis on Scleractinia		1	2.50	2.50
	EP282	Star Polype Green	Clavularia Viridis on Scleractinia		1	5.00	5.00
	EP324A	Mushrooms Hairy Green	Discosoma Florida on Scleractinia.	S	1	3.00	3.00
2	E 253	Jewel Branching Coral	Goniopora Minor		1	3.00	3.00
	E 257	Bubble Coral	Pterogyra Sinuosa	S	1	3.00	3.00
	E 266	Brain Coral Green	Trachyphyllia Geoffroyi	ML	1	3.00	3.00
	E 266S	Brain Coral Green	Trachyphyllia Geoffroyi	S	1	2.00	2.00
	E 266C	Candycane Coral	Caulastrea Tumida		3	3.00	9.00
	EP266	Leather Soft Coral	Sinularia Brasica on Scleractinia		2	2.50	5.00
	EP283	Glove Polype	Clavularia Viridis on Scleractinia		3	2.50	7.50
	EP286A	Green Sand Polyp	Zoanthus Spec on Scleractinia.		1	3.00	3.00
	EP267	Polype Yellow	Parazoanthus gracilis on Scleractinia.		3	2.00	6.00
	EP286	Stick Polyps	Parazoanthus swilli on Scleractinia.		1	2.50	2.50
	EP329	Mushrooms Assorted	Actinodacrus Multicolor on Scleractinia.	S	1	2.50	2.50
	EP333	Mushrooms Grey	Ricordia Florida on Scleractinia.	S	1	2.00	2.00
	EP335A	Marble Mushrooms	Actinodacrus Marmoratus on Scleractinia.	S	1	3.25	3.25
3	E 245	Flower Coral Green	Euphyllia Cristata	S	1	15.00	15.00

E 251A	Metalic Green Plate Coral	Heliolungia Actiniformis	1	4.00	4.00
E 281B	Green Plate Coral	Heliolungia Actiniformis	1	3.00	3.00
E 254	Lemon Coral	Goniopora Minor	1	2.00	2.00
E 254A	Lemon Coral Green Metalic	Goniopora Minor	2	3.25	6.50
E 257A	Green Bubble Coral	Pterogyra Sinuosa	S	2	7.00 14.00
E 260G	Brain Coral Green Metalic	Trachyphyllia Geoffroyi	2	5.00	10.00
E 260R	Brain Coral Red	Trachyphyllia Geoffroyi	S	1	3.00 3.00
E 260S	Brain Coral Green	Trachyphyllia Geoffroyi	S	2	2.00 4.00
E 354C	Crystal Coral	Galaxea Fascicularis	4	2.00	8.00
ER237B	Cauliflower (Colored) On Rock	Dendroneophtya Divaricata on Scleractinia	3	3.00	9.00
ER263	Umbrella Soft Coral	Sarcophyton Glaucum on Scleractinia	3	2.00	6.00
4					
E 247C	Green Plate Coral	Euphyllia Cristata	2	6.00	12.00
E 252	Plate Coral	Heliolungia Actiniformis	3	2.00	6.00
E 253B	Purple Lemon Coral	Goniopora Minor	1	7.50	7.50
E 259G	Green Pearl Coral	Pterogyra Sinuosa	S	1	6.00 6.00
E 275	Cloverfish Anemone	Orypodendrum Adhaesivum	2	2.00	4.00
E 277	Common Anemone	Radianthus Ritteri	2	2.50	5.00
ER282	Star Polype Green	Cleutharia Viridis on Scleractinia	3	5.00	15.00
ER285	Button Polype Green	Zoanthus Puchellus on Scleractinia	1	2.50	2.50
ER287	Polype Yellow	Parazoanthus gracilis on Scleractinia	1	2.00	2.00
ER320	Mushrooms Blue	Actinodiscus Coeruleus on Scleractinia	S	1	4.50 4.50
ER322	Mushrooms Red	Actinodiscus Nummiferus on Scleractinia	S	3	5.00 15.00
ER324	Mushrooms Hairy	Diasona Florida on Scleractinia	S	4	2.00 8.00
ER335A	Marble Mushroom	Actinodiscus Marmoratus on Scleractinia	S	2	3.25 6.50
6					
ER238C	Seraja Coll Pink	Cleutharia Colli on Scleractinia	S	2	4.00 8.00
ER238D	Seraja Coll Pink	Cleutharia Colli on Scleractinia	ML	2	5.25 10.50
ER238G	Yellow Cleutharia Soft Coral	Cleutharia Colli on Scleractinia	ML	2	5.00 10.00
6					
E 252	Plate Coral	Heliolungia Actiniformis	2	2.00	4.00
E 268C	Candycone Coral	Gulastrea Tuxida	5	3.00	15.00
ER238F	Yellow Cleutharia Soft Coral	Cleutharia Colli on Scleractinia	S	2	3.75 7.50
7					
E 254	Lemon Coral	Goniopora Minor	5	2.00	10.00
E 260G	Green Pearl Coral	Pterogyra Sinuosa	S	2	6.00 12.00
E 354C	Crystal Coral	Galaxea Fascicularis	2	2.00	4.00
ER262A	Yellow Tree Soft Coral	Licophyton Arboreum on Scleractinia	2	3.00	6.00
ER264B	Pink Finger Soft Coral	Strularia Asterolobata on Scleractinia	2	3.50	7.00
ER264C	Yellow Finger Soft Coral	Strularia Asterolobata on Scleractinia	2	3.50	7.00
8					
E 239	Hammer Coral Cream	Euphyllia Cristata	S	1	2.00 2.00
E 254B	Yellow Lemon Coral	Goniopora Minor	3	3.50	10.50
ER297A	Cauliflower Soft Coral	Lamella Spec on Scleractinia	3	2.00	6.00
ER263B	Yellow Umbrella Soft Cor	Sarcophyton Glaucum on Scleractinia	3	3.00	9.00
* ER312A	Tamarind Leaves	Caulerpa Spec on Scleractinia	2	2.00	4.00

* ER313	Grape Algae	Caulerpa Racemosa on Scleractinia.		2	1.75	3.50
* ER314	Algae Red	Rhodomenia Mexicana on Scleractinia.		1	1.75	1.75
9						
E 239	Hammer Coral Cream	Euphyllia Cristata	S	2	2.00	4.00
E 208A	Brain Coral Red	Trachyphyllia Geoffroyi	ML	1	5.00	5.00
E 208D	Yellow Brain Coral	Trachyphyllia Geoffroyi		4	4.50	18.00
E 354C	Crystal Coral	Galaxoa Fascicularis		2	2.00	4.00
ER263B	Yellow Umbrella Soft Crl	Sarcophyton Glaucum on Scleractinia		3	3.00	9.00
* ER312A	Tamarind Leaves	Caulerpa Spec on Scleractinia.		1	2.00	2.00
* ER313	Grape Algae	Caulerpa Racemosa on Scleractinia.		1	1.75	1.75
* ER314	Algae Red	Rhodomenia Mexicana on Scleractinia.		2	1.75	3.50
ER327	Mushrooms Metallic Green	Rhodactis Viridis on Scleractinia.		2	3.75	7.50
10						
E 251B	Green Plate Coral	Heliopungia Actiniformis		2	3.00	6.00
E 252	Plate Coral	Heliopungia Actiniformis		2	2.00	4.00
E 253	Jewel Branching Coral	Goniopora Minor		2	3.00	6.00
E 257A	Green Bubble Coral	Pterogyra Sinuosa	6	2	7.00	14.00
ER262A	Yellow Tree Soft Coral	Lilophyton Arboreum on Scleractinia		1	3.00	3.00
ER262	Star Polyps Green	Clavularia Viridis on Scleractinia		2	5.00	10.00
ER265	Butan Polyps Green	Zoanthus Puchellus on Scleractinia		1	2.50	2.50
ER267	Polyps Yellow	Parazoanthus gracilis on Scleractinia.		4	2.00	8.00
ER322	Mushrooms Red	Actinodiscus Nummiferus on Scleractinia.	S	2	5.00	10.00
11						
E 239A	Hammer Coral Cream	Euphyllia Cristata	M	2	3.00	6.00
E 247B	Torch Coral (Green)	Euphyllia Cristata		2	4.50	9.00
E 253	Jewel Branching Coral	Goniopora Minor		2	3.00	6.00
E 254A	Lemon Coral Green Metallic	Goniopora Minor		2	3.25	6.50
E 208D	Yellow Brain Coral	Trachyphyllia Geoffroyi		1	4.50	4.50
E 354C	Crystal Coral	Galaxoa Fascicularis		3	2.00	6.00
ER208F	Yellow Cladella Soft Coral	Cladella Coll on Scleractinia	S	2	3.75	7.50
ER202A	Yellow Tree Soft Coral	Lilophyton Arboreum on Scleractinia		5	3.00	15.00
ER327	Mushrooms Metallic Green	Rhodactis Viridis on Scleractinia.		4	3.75	15.00
12						
E 239	Hammer Coral Cream	Euphyllia Cristata	S	1	2.00	2.00
E 247D	Putal Coral (Cream)	Euphyllia Cristata		2	2.50	5.00
E 257	Bubble Coral	Pterogyra Sinuosa	S	2	3.00	6.00
E 275	Glowfish Anemone	Cryptodendrum Adhaesivum		4	2.00	8.00
E 277	Common Anemone	Redanthus Ritteri		3	2.50	7.50
ER267	Polyps Yellow	Parazoanthus gracilis on Scleractinia.		3	2.00	6.00
ER331	Mushrooms Assorted	Actinodiscus Notabilis on Scleractinia.	L	2	6.00	12.00

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	E 354C	Crystal Coral	Galaxea Fascicularis		3	2.00	6.00
	ER333	Mushrooms Grey	Ricordia Florida on Scleractinia.	S	2	2.00	4.00
	ER333	Mushrooms Grey	Ricordia Florida on Scleractinia.	S	4	2.00	8.00
18	E 254B	Yellow Lemon Coral	Goniopora Minor		2	3.50	7.00
	ER238D	Seroja Colt Pink	Cleodella Colti on Scleractinia	WL	5	5.25	26.25
	ER263B	Yellow Umbrella Soft Ori	Sarcophyton Glaucum on Scleractinia		2	3.00	6.00
19	E 252	Plate Coral	Heliofungia Actiniformis		4	2.00	8.00
	E 254B	Yellow Lemon Coral	Goniopora Minor		2	3.50	7.00
	E 257B	Bubble Coral	Pterogyra Sinuosa	M	2	4.50	9.00
	E 354C	Crystal Coral	Galaxea Fascicularis		1	2.00	2.00
	ER264B	Pink Finger Soft Coral	Simularia Asterobata on Scleractinia		4	3.50	14.00
	ER263	Clove Polype	Cleularia Viridis on Scleractinia		4	2.50	10.00
	ER327	Mushrooms Metallic Green	Rhodactis Viridis on Scleractinia.		2	3.75	7.50
20	D 022	Red Tomato Clown	Amphiprion Frenatus		1	1.50	1.50
	D 028	Threadfin Butterfly	Chaetodon Auriga	S	2	1.50	3.00
	D 032	Raccoon Butterfly	Chaetodon Lunata	S	3	2.00	6.00
	D 151	Smooth-Headed Unicornfish	Naso Lituratus	S	5	2.75	13.75
21	E 257A	Green Bubble Coral	Pterogyra Sinuosa	S	2	7.00	14.00
	E 275	Corn Anemone	Physobranchia Romanyf		4	3.00	12.00
	ER281	Star Polype	Cleularia Viridis on Scleractinia		2	2.50	5.00
	ER282	Star Polype Green	Cleularia Viridis on Scleractinia		2	5.00	10.00
	ER283	Clove Polype	Cleularia Viridis on Scleractinia		1	2.50	2.50
*	ER312	Algae Green / in Bags	Caulerpa Bertularoides on Scleractinia.		2	1.70	3.40
*	ER312A	Tamarind Leaves	Caulerpa Spec on Scleractinia.		2	2.00	4.00
22	E 280G	Brain Coral Green Metallic	Trachyphyllia Geoffroyi		2	5.00	10.00
	E 289C	Candycara Coral	Caulastrea Tumida		3	3.00	9.00
	E 278	Red-Bass Anemone	Actinia Tenetrosa		4	4.50	18.00
	ER237B	Cauliflower (Colored) On Rock	Dendronophtya Divericata on Scleractinia		2	9.00	6.00
	ER283	Clove Polyps	Cleularia Viridis on Scleractinia		5	2.50	12.50
	ER287	Polypa Yellow	Parazoanthus gracilis on Scleractinia.		4	2.00	8.00
	ER334A	Green Grey Mushrooms on Rock	Ricordia Spec. on Scleractinia	S	2	4.25	8.50
23	E 239	Hammer Coral Cream	Euphyllia Cristata	S	2	2.00	4.00
	E 252	Plate Coral	Heliofungia Actiniformis		3	2.00	6.00
	E 257	Bubble Coral	Pterogyra Sinuosa	S	2	3.00	6.00
	E 288	Brain Coral Green	Trachyphyllia Geoffroyi	WL	5	3.00	15.00
	ER262	Tree Soft Coral	Lithophyton Arboreum on scleractinia		2	2.00	4.00

	E 354C	Crystal Coral	Galaxea Fascicularis		2	2.00	4.00
	ER238D	Seroja Coll Pink	Cladella Coll on Scleractinia	ML	2	5.25	10.50
	ER238D	Seroja Coll Pink	Cladella Coll on Scleractinia	ML	2	5.25	10.50
29	E 252	Plate Coral	Heliofungia Actiniformis		2	2.00	4.00
	E 253	Jewel Branching Coral	Goniopora Minor		2	3.00	6.00
	E 354C	Crystal Coral	Galaxea Fascicularis		3	2.00	6.00
	ER237A	Cauliflower Soft Coral	Lemnalia Spec on Scleractinia		3	2.00	6.00
	ER283	Glove Polyps	Cleavelia Viridis on Scleractinia		3	2.50	7.50
	ER325	Mushrooms Hairy	Dissosoma Florida on Scleractinia.	M	5	3.50	17.50
30	ER238D	Seroja Coll Pink	Cladella Coll on Scleractinia	ML	1	5.25	5.25
	ER238F	Yellow Cladella Soft Coral	Cladella Coll on Scleractinia	S	1	3.75	3.75
	ER238G	Yellow Cladella Soft Coral	Cladella Coll on Scleractinia	ML	1	5.00	5.00
	ER282A	Yellow Tree Soft Coral	Lilophyton Arboreum on Scleractinia		1	3.00	3.00
*	ER312	Algae Green / in Bags	Caulerpa Bertularoides on Scleractinia.		2	1.70	3.40
*	ER312A	Tamarind Leaves	Caulerpa Spec on Scleractinia.		2	2.00	4.00
*	ER313	Grape Algae	Caulerpa Racemosa on Scleractinia.		2	1.75	3.50
*	ER314	Algae Red	Rhodomenia Mexicana on Scleractinia.		2	1.75	3.50
31	E 251	Plate Coral Red	Heliofungia Actiniformis		1	6.00	6.00
	E 252	Plate Coral	Heliofungia Actiniformis		2	2.00	4.00
	E 253B	Purple Lemon Coral	Goniopora Minor		2	7.50	15.00
	E 254A	Lemon Coral Green Metallic	Goniopora Minor		2	3.25	6.50
	E 288A	Brain Coral Red	Trachyphyllia Geoffroyi	ML	1	5.00	5.00
	E 288B	Brain Coral Green	Trachyphyllia Geoffroyi	S	1	2.00	2.00
	E 352	Red Sea Apple	Pseudocoloburus Axiologus		2	5.00	10.00
	ER282	Tree Soft Coral	Lilophyton Arboreum on scleractinia		1	2.00	2.00
	ER282A	Yellow Tree Soft Coral	Lilophyton Arboreum on Scleractinia		1	3.00	3.00
	ER284B	Pink Finger Soft Coral	Sinularia Asterolobata on Scleractinia		1	3.50	3.50
	ER284C	Yellow Finger Soft Coral	Sinularia Asterolobata on Scleractinia		1	3.50	3.50
	ER282	Star Polyps Green	Cleavelia Viridis on Scleractinia		2	5.00	10.00
	ER287	Polyps Yellow	Parazoanthus gracilis on Scleractinia.		2	2.00	4.00
	ER320	Mushrooms Assorted	Actinodiscus Mutabilis on Scleractinia.	S	2	2.50	5.00
32	D 211	Red Majestic Shrimp	Enoplonetopus Occidentalis		3	1.75	5.25
	D 212	Red-Backed Shrimp	Lysanata Amboinensis		3	1.75	5.25
	D 215	LOBSTER	Palinurus Ornatus		3	1.50	4.50
	D 218	Red-Banded Shrimp	Stenopus Hispidus		3	0.75	2.25
	E 241	Hammer Coral Green	Euphyllia Cristata	S	1	5.00	5.00
	E 251A	Metallic Green Plate Coral	Heliofungia Actiniformis		1	4.00	4.00
	E 251B	Green Plate Coral	Heliofungia Actiniformis		3	3.00	9.00

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E 252	Plate Coral	<i>Heliopora Actiniformis</i>		3	2.00	6.00
E 258B	Green Pearl Coral	<i>Platygyra Sinuosa</i>	S	1	6.00	6.00
E 266B	Brain Coral Green	<i>Trachyphyllia Geoffroyi</i>	S	2	2.00	4.00
E 352	Red Sea Apple	<i>Pseudocolobanus Axiologus</i>		2	5.00	10.00
ER284	Finger Soft Coral	<i>Sinularia Asterolepta</i> on <i>Scleractinia</i>		2	2.50	5.00
ER287	Polype Yellow	<i>Paraspongia gracilis</i> on <i>Scleractinia</i>		2	2.00	4.00
ER329	Mushrooms Assorted	<i>Actinodiscus Mutabilis</i> on <i>Scleractinia</i>	S	2	2.50	5.00

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E 238	Hammer Coral Cream	<i>Euphyllia Cristata</i>	S	4	2.00	8.00
E 247B	Torch Coral (Green)	<i>Euphyllia Cristata</i>		2	4.50	9.00
E 268D	Yellow Brain Coral	<i>Trachyphyllia Geoffroyi</i>		2	4.00	8.00
E 277	Common Anemone	<i>Radianthus Ritteri</i>		4	2.50	10.00
ER298B	Cladella Soft Coral	<i>Cladella Collis</i> on <i>Scleractinia</i>	XL	2	6.00	12.00
* ER312A	Tamarind Leaves	<i>Caulerpa Spec</i> on <i>Scleractinia</i>		2	2.00	4.00
* ER314	Algae Red	<i>Rhodomenia Menziesii</i> on <i>Scleractinia</i>		2	1.75	3.50
ER330	Mushrooms Assorted	<i>Actinodiscus Mutabilis</i> on <i>Scleractinia</i>	M	2	4.00	8.00

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E 239	Hammer Coral Cream	<i>Euphyllia Cristata</i>	S	2	2.00	4.00
E 247C	Green Puffin Coral	<i>Euphyllia Cristata</i>		2	6.00	12.00
E 254A	Lemon Coral Green Metallic	<i>Goniopora Minor</i>		2	3.25	6.50
E 268C	Candycane Coral	<i>Caulastrea Tumida</i>		1	3.00	3.00
E 272	Sun Anemone	<i>Bartholmeas Anemone</i>		1	2.50	2.50
E 273	Corn Anemone	<i>Physobrachia Rameayi</i>		1	3.00	3.00
E 278	Red-Bass Anemone	<i>Actinia Terebrosa</i>		1	4.50	4.50
ER238A	Cladella Soft Coral	<i>Cladella Collis</i> on <i>Scleractinia</i>	WL	2	4.50	9.00
ER282A	Yellow Tree Soft Coral	<i>Lithophyton Arboreum</i> on <i>Scleractinia</i>		1	3.00	3.00
ER285	Button Polype Green	<i>Zonitius Puchellus</i> on <i>Scleractinia</i>		1	2.50	2.50
ER325	Mushrooms Hairy	<i>Diacoona Florida</i> on <i>Scleractinia</i>	M	2	3.50	7.00

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E 231	Red Starfish	<i>Fromia Elegans</i>	S	10	1.00	10.00
E 268D	Yellow Brain Coral	<i>Trachyphyllia Geoffroyi</i>		1	4.50	4.50
E 273	Corn Anemone	<i>Physobrachia Rameayi</i>		3	3.00	9.00
E 277A	Yellow Sand Anemone	<i>Radianthus Ritteri</i>		1	4.50	4.50
ER238D	Seroja Coll Pink	<i>Cladella Collis</i> on <i>Scleractinia</i>	WL	1	5.25	5.25
ER238G	Yellow Cladella Soft Coral	<i>Cladella Collis</i> on <i>Scleractinia</i>	WL	1	5.00	5.00
ER268B	Yellow Umbrella Soft Cor	<i>Sarcophyton Glaucum</i> on <i>Scleractinia</i>		2	3.00	6.00
ER284B	Pink Finger Soft Coral	<i>Sinularia Asterolepta</i> on <i>Scleractinia</i>		1	3.50	3.50
* ER312	Algae Green / in Bags	<i>Caulerpa Sertularioides</i> on <i>Scleractinia</i>		1	1.70	1.70
* ER312A	Tamarind Leaves	<i>Caulerpa Spec</i> on <i>Scleractinia</i>		1	2.00	2.00

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D 010	Clark's Anemonetfish	<i>Amphiprion Clarki</i>		3	2.00	6.00
D 020A	Mason Clown/Yellow Barr	<i>Premnas Biaculeatus</i>		15	4.00	60.00

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	D 041	Copperband Butterfly	Chelmon Rostratus	S/M/L	2	2.00	4.00
	D 131	Foxfish	Lp Vulpinus	M/L	3	4.50	13.50
	D 144	Powder-Blue Surgeon	Acanthurus Leucostemon	S	2	8.00	16.00
	D 154	Blue Tang	Paracanthurus Hepatus	S	1	5.50	5.50
	D 155	Blue Tang	Paracanthurus Hepatus	M/L	1	7.00	7.00
37	D 006	Blue-Green Chromis	Chromis Caerules		20	0.40	8.00
	D 018A	True Percula/Clown fish	Amphiprion Percula		15	3.25	48.75
	D 019	Clark's Anemonefish	Amphiprion Clarki		2	2.00	4.00
	D 007	Cleaner Wrasse	Labroides Dimidiatus		13	0.90	11.70
	D 113	Polkadot Boxfish	Ostracion Cubicus		1	2.00	2.00
	D 164	Blue Tang	Paracanthurus Hepatus	S	1	5.50	5.50
	D 155	Blue Tang	Paracanthurus Hepatus	M/L	1	7.00	7.00
38	D 201	Black-Tip Reef Shark	Carcharhinus Melanopterus		1	60.00	60.00
39	D 201	Black-Tip Reef Shark	Carcharhinus Melanopterus		1	60.00	60.00
						Sub Total	2,167.45
						Packing Charges : 20 boxes @ US\$ 8.00	312.00
						Total	2,479.45