



# The Drifting Seed

May 1, 1999

Vol. 5, No. 1

## THE DRIFTING SEED

A triannual *Newsletter* covering seeds and fruits dispersed by tropical currents and the people who collect and study them.

Distributed to more than 20 countries.

Cathie Katz, Editor and Publisher  
Dr. Charles R. (Bob) Gunn, Advisor and Columnist  
Sue Bradley, Business Manager  
Patricia R. Frazier, Production Editor  
John V. Dennis, Sr., Columnist  
Ed Perry, Columnist  
Pete Zies, Columnist

The 1999 International Sea-Bean Symposium will be at the Cocoa Beach Public Library, 550 N. Brevard Ave., Cocoa Beach, Florida, October 22 -24. Directions and hotel information will be in the next newsletter.

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For seed identification, contact  
**Pete Zies** (Tel: 407 260-6887)  
613 Rodney Drive  
Altamonte Springs, FL 32701  
e.mail: bazil1@juno.com

**Cathie Katz**  
P.O. Box 510366  
Melbourne Beach, FL 32951 USA  
e.mail: seabean@castlegate.net

This issue of *The Drifting Seed* begins our fifth year -- a milestone of sea-beaner evolution. We started as a simple organism drifting like plankton, bumping along as we did, into passing ships and floating toys. But we always kept our vision on the shore where sea-beans came with the seaweed, bottles, and who-knows-what-else from around the world. In the years since Dr. Gunn and I started this publication, our group has grown from a few to five-hundred, exchanging bits of information while gathering algae, barnacles, crustacean tags, and lots of sneakers.

"Collectively, we hanker to accumulate all the information in the universe and distribute it around among ourselves as though it were a kind of essential foodstuff, ant-fashion (the faintest trace of real news in science has the action of a pheromone, lifting the hairs of workers in laboratories at the ends of the earth) ..." - Lewis Thomas in *The Lives of a Cell*

With this issue, we've added scores of new readers who may not know the Drifters' mission, which is, simply, to exchange information about sea-beans. We gather our beans for identification and try to discover patterns and trends. This newsletter publishes our progress and connects beachwalkers and scientists globally.

"I intend my essays for professional and lay readers alike -- an old tradition, by the way, in scientific writing from Galileo to Darwin, although effectively lost today."

(- Stephen Jay Gould in *Dinosaur in a Haystack*)

We realize the importance of exchanging information between professionals and lay readers. Our challenge is to find each other. What better way than by putting this newsletter in herbaria and libraries around the world? Messages in bottles may be romantic, but not as reliable. This newsletter finds its way to those most intimately involved: jewelry-makers, botanists, surfers, park rangers, naturalists, lapidaries, oceanographers, and of course beachcombers.

Sea-beans are, as John Dennis says, the most unexplored area of botany. And no wonder! Sea-beans know NO boundaries ... not geographic, political, cultural, social or economic. They drift from current to current, country to country, with little bean-minds of their own. We can't put tiny tracking devices on them, like we do the sea turtles. So how can we know how long they've been drifting and where they originate? And what about their independence as far as coming onshore. Do they have a schedule? We don't know. Each fall, we greet the armada, and then a few months later they disappear. This April we witnessed their typical little spring tease with a few days of beach activity, coming in with the east winds as if to say, "We're on our way, see you in September (♪♪♪)." As Jack Hoskins says, "Oh, those damn crazy beans!" But we keep on walking the beach with our eyes focused maniacally on the wrack.

"It sometimes looks like a lonely activity, but it is as much the opposite of lonely as human behavior can be ... the individual almost vanishes into the mass of minds tumbling over each other, carrying information from place to place, passing it around at the speed of light."

Lewis Thomas in *The Lives of a Cell*

We might not be passing our information around at the speed of light, but we're doing our best to publish what we have. (*Publish* means "to make public.") And so this newsletter is making public our findings in Tasmania, New Zealand, Kenya, Australia, United Kingdom, Japan, Spain, Indonesia, South Africa ...

With that, I now have an opportunity to thank all our contributors for the generosity of money and articles. Also, to apologize to the authors of postponed articles and the authors whose columns contained mistakes because of my poor typing skills.

"One of the advantages of being disorderly is that one is constantly making exciting discoveries."

- A.A.Milne (author of *Winnie the Pooh*)

To help overcome my disorderly nature, a wonderful beach treasure drifted in to add her support, just when I least expected it and needed it most: Pat Frazier, one of our original Drifters, saw that I was struggling against the current and casually asked, "Need some help?" The pitiful look on my face was answer enough. And so, like a gift from the sea, she reached out and gathered the floating debris in my office and quietly assembled this newsletter. Did anyone ever doubt that sea-beans bring good luck?



"... in an environment filled with predators or their modern equivalents, having some fussbudgets and worriers around is adaptive for the group. That's why they stay so well represented in the gene pool." - Winifred Gallagher in *I.D.*

Smith, Jeremy M.B. 1999. *Australian Driftseeds* - A Compendium of Seeds and Fruits Commonly Found on Australian Beaches. 123 pp. (including black and white disseminules drawings, maps, and charts) ISBN 186389 537 X.

For orders from the United States: Make personal check payable to the University of New England for \$14.00 US, to cover book cost and airmail postage, and mail to the Map Librarian, School of Human & Environmental Studies, University of New England, Armidale, New South Wales 2351, Australia. For other countries: Convert \$Aus 20.00 to your money and mail personal check to the above address for air mail shipment.



Above: Author Jeremy Smith of Australia

Fortunately for us Smith decided to pursue the collection and study of drift disseminules found on Australian beaches. Over the years he collected both on beaches and from the knowledge of others, and he kept accurate records. He also pursued his drift studies at the University of the South Pacific, Fiji and with Charles Nelson at Trinity College, Dublin. He has taken these data and welded them into a remarkable book: A major valuable contribution to our knowledge of drift disseminules. I expect that most of us will have a difficult time opening this paperback book, because of its cover: Barbara Waterhouse is shown on a Bingil Bay beach so rich in drift disseminules that she had to walk on them to be centered in the color photograph! (But then I think about how sore my back would be after just an hour of bending and picking on this beach, let alone all day.)

The text is bipartite. **Part One:** Biogeography and Beachcombing covers folklore, science, sources, evolution, mechanisms, and winds and currents. Bird dissemination also is discussed. Included in this part is Figure 1 which is the front page of the Drifting Seed volume 2, number 2. **Part Two:** An illustrated Inventory of Common and Interesting Australian Driftseeds perfectly summarizes the data and drawings covered by this part. After identifying and locating the studied beaches, the catalog starts on page 26 and runs to page 100. The text for each disseminule with a distribution map (both whether present or absent from studied beaches) faces the plate page, so that the reader can see and read about one or more disseminules without having to turn pages. To accomplish this neat presentation, the illustrations by Jill Kinnear are large and the text is reduced but easily-readable. The disseminules in the catalog are arranged by size from largest to smallest: Coconut to Vere (*Colubrina asiatica*, Rhamnaceae).

I first turned to my favorite Australian drift disseminule, Moreton Bay-chestnut, a legume. The typical text contains these data: Scientific name with authors, family, common names, habit and habitat, distribution, disseminule description, location of stranded disseminules, uses of plant, drift disseminule category, and specimen citation of depicted disseminule. A comprehensive list of references, an index by family names with taxa pages noted, and a complete index conclude the book. This book is a must for collectors and libraries. A joy to read and use. You will meet new disseminules and revisit some familiar ones.

I have not seen this book, but based on reviews and knowing the author for many years, I would call your attention to a major contribution to our knowledge of the plants of Florida. R.P. Wunderlin. 1998. *A Guide to the Vascular Plants of Florida*. 704 pages. University Press of Florida, Gainesville, FL. \$35.00. ISBN 0-8130-1556. Over 4000 taxa are covered from the Panhandle to the Keys. The taxa are fully keyed and indexed. A bargain for those interested in plants of Florida.

We didn't receive Cathy Yow's just-published book in time for review (*Jewelry From Nature: 45 Great Projects Using Sticks and Stones, Seeds and Bones*; \$18.95, ISBN 1579901077), so we'll include it in the next newsletter. Her book can be ordered from most U.S. bookstores or online through amazon.com and barnes&noble.com.

**A JOURNAL ARTICLE BY JOHAN ERNST GUNNERUS (1718-1773):  
Bishop of Dornthiem [Trondhiem], Norway and Botanist**

The so-called confinement-stone or floating (wet)-kidneys, or worm-stones and some other foreign fruits which can be found here and there on the beaches of Norway by J.E. Gunnerus published in Det Trondhiemske Selskabs Skrifter 3:15-32. 1765.

The English translation of this article, originally written in Norwegian, was provided by the sister-in-law of John V. Dennis, Sr. and supplemented by Bob Gunn.

[Notes: This is one of the most famous articles about tropical drift disseminules that were, in some cases, brought from tropical America to Norway and environs by the Gulf Stream. The disseminules are the: Sea Heart, *Entada gigas*, his Confinement-stone or Floating-kidney; Sea-bean, *Mucuna* sp. his Worm-stone; Coconut, *Cocos nucifera*, his Coconut; Gourd, *Cucurbita lagenaria*, his Gourd; Calabash, *Crescentia cujete*, his Calabash; Purging Cassia, *Cassia fistula*, his "core," and Cashew, *Anacardium occidentale*, his Anacardium. Technical improvements in this translation were made by Bob Gunn, and some of his word(s) are intercalated in this translation within brackets "[ ]".

The Literature Cited was partially completed by Joe Kirkbride using several electronic data bases and the United States National Agricultural Library. Major support for the literature search was contributed by John Flanagan, Deputy Librarian, Royal Botanic Gardens, Kew, Richmond, Surrey, England and Annelise Hartmann, Librarian, Botanisk Centralbibliotek, Copenhagen, Denmark. The illustration of Bishop Gunnerus was provided by the Hunt Institute for Botanical Documentation, Carnegie Mellon University, Anita L. Karg, Archivist.



Dr. Johan Ernst Gunnerus,

1718-1773 og sammen med Suhm og Schouling Siffer til  
det Kgl. norske Videnskaberne Selskab i Trondhjem.

[From the archivist at Carnegie Mellon: "...under the image is the name spelled 'Gunerus.' That may be an alternate spelling but all of the sources I referred to spell the name with double 'n.']

Asides: 1) Volumes 1-3 of this journal were known as Det Trondhiemske Selskabs Skrifter, but with volume 4 (1768) its name became Norske Videnskaberne Selskabs Skrifter. 2) The genus *Gunnera*, the only genus in the Gunneraceae, honors J.E. Gunnerus. 3) J.E. Gunnerus may be cited as J.E. Gunner in some botanical literature. 4) Pete Zies has black and white photographs of the drift disseminules housed in the Trondheim Museum.]

**The Confinement-stone or Floating Kidney, *Entada gigas*, Sea-Heart**

One often finds along the beaches of this diocese as well as other places in Norway a variety of foreign fruits [tropical drift disseminules]. But one finds none of these in great quantities except one kind with a hard skin [seed coat or testa] like a bean or nut [both words refer to a seed] that we in this country call "the Confinement-stone." Many people look upon it as a fruit which lives on the bottom of the ocean and belongs to our coral or sea-trees and [this is] the reason why it is sometimes called the "sea-tree nut." One makes use of these fruits for snuff boxes, and this is done in two ways. Sometimes one makes a hole in the upper part, and it is through this that the kernel [embryo] is removed. Those who have the means and the desire may create a silver foot and silver neck for it. Another approach is to split the skin [seed coat or testa] and use one part for the bottom and one part for the cover for the snuff box, while the sides may be made of silver. Superstitious people of Nordland [Norway] and Finnmark [Finland] regard it as a wonderful way to solve the Secundinas [birthing problems] by having a woman in birth pains drink only from the shell of this nut, and from it she may drink either ale or spirits. Because of this belief and the toughness of the skin [seed coat], this fruit [seed] was given the name of Confinement-stone.

At Sunnmoere in the diocese of Bergen, [Norway] the learned Mr. [Hans] Stroem ([1762], 138-139, 388) related that one may use these fruits [seeds] as medicine for cattle, and it is given the name: "Bow and Arrow Stone." Although this name, as used by Stroem, also is used for the so-called Hairbells (Agegropolis) which are used for the same purpose. Debes ([1673], 169) said that the Confinement-stones, he called them Floating-kidneys, also could be found on [the beaches of] the Faroe Islands. Claussen ([1632], 32:124) recorded: "On the Faroe Islands exists a small stone floating by the beach shaped like a small heart or kidney, and the belief is that it may give birth to another if it is hidden long enough." However, there could not possibly be many people on the Faroes who are dumb enough to believe in the last-mentioned birth. Debes also considers it an insult on the part of Claussen and felt greatly upset that Claussen would accuse the Faroe Islanders in such an inconsiderate manner for such a stupid superstition. Nevertheless the deserving and very learned Debes (p. 169, footnote b) was not quite free of all sorts of superstition himself. He believed that a small piece of cinnamon [Cinnamomum verum] bark or mace [Myristica fragrans] in someone's pocket could cause that person to drown in a lake, while others in the same situation but without these items in his pocket, would be saved. The strangest of all is to arrive at these conclusions, Debes had to go to extreme trouble to construct an "intricate logical and common sense" [proof] based on Linnaeus ([1749]), who is the Princeps Botanicorum [the "Prince of Botany"]. [Debes] believed [his logic] should fully convince any farmer on the Faroes or people elsewhere of the rightness of his arguments.

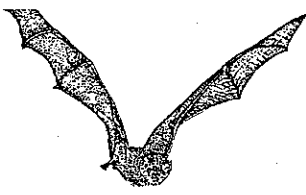
But it is now important for me to weed out the incorrect and superstitious thoughts which many have about our Confinement-stones or Floating-kidney stones. I will describe in short to you how they look. The skin [seed coat] is brownish-black, smooth, hard, and like wood, although not very thick. It is as large as a minted [silver] dollar, and sometimes larger, though not completely circular but more in the form of a heart and there exists a small indentation in one part, and it is much slimmer in another part and flat on the sides. Inside these is a kernel [embryo] surrounded by a fine rind [inner seed coat] which at first tastes bitter-sweet or quinine. At any rate one soon finds a great difference between nuts [embryos] and fruits [seeds]: Some have lost more of their taste and strength than others.

One may search in vain for these fruits here either on land or sea (near Trondhiem), because they are a kind [species] of American bean [legume]. This fact we can learn from Clusi ([1605], book 10, chapter 49, page 335-336) in his remarks [is it about or to?] Nicolaum Monardum [Nicolus Monard, no citation, but possibly 1574] and described and illustrated it under the name of Phaseolus major, Fabae purgatrix, nomine missus, etc., and related furthermore that such a bean [legume seed] is named St. Thomas Heart by some people, because it may be found on the island of St. Thomas and is heart-shaped (J.B. Bobahsch,[1761], p. 138 plate 11, fig. 2). Also one finds here accounts of the common man's superstitions in Norway concerning these beans [legume seeds]. Clusi ([1605], book 3, chapter 8, page 65) reported that a learned friend, who must have been Dr. Heyer in Bergen, [Norway], had told him that on the Faroe Islands people imagined that the fruits [seeds] lived amongst [the] seaweed. One had great trust in them [seeds], as they brought good luck and prosperity to the households where one [of them] was kept.

But the strangest of all is that Clusi ([1605, no page number]) and Worm [1655], 26:198) were sent something that was claimed to be sea-peas, and these pea pods turned out to be nothing but eggs of the ray [order Rajiformes or Batoidei]. No matter what the pods really looked like, in which these peas belong, the same famous Clusi ([1605], book 3, chapter 8, page 65) showed us just how to describe as well as to illustrate it [a Sea heart]. Bauhin ([1671], p. 138) called it Lobus crassus ex insula D. Thomae or Faba purgatrix latissima ex ensula D. Thomae. Tabernaemontanus [Theodorus (1590), 878, figure F or G) called it Phasolus americanus purgans, and [he] illustrated it.

Claude du Molinet ([1692], 2:208, number 11) told about a kind of bean [legume seed] that resembles these under the receipt [name]: Une Gouffe de Chataignes. Although this is not quite correct, he said they were called Chataignes de Mer. In our matter he continued with the Confinement-stone: The French also make snuff boxes decorated with silver. However, I am not convinced that they are the same kind [species] of beans [seeds], because he did not illustrate them perfectly. He only showed parts of the pod. His pod drawing is fairly different from the drawing by Clusi ([1605]) and seemed more like Phaseoli Brasiliani siliquam in Tabernamontanum [Theodorus (1590), 877], and in Clusi ([1605], book 10, chapter 49, page 336) and in a note by Monardum [Monard]. Furthermore Molinet made his pod as long as an arm and said that it sometimes contains 7-8 beans. This does not correspond with the Clusi description of Lobus crassus ex insula S. Thomae, where the so-called Confinement-stones are found. It seems more than likely that our Confinement-stones resemble those illustrated in Valentinus ([Valentini, 1714], volume 1, book 2, section 5, chapter 25, page 345) under the name Phaseolus D. Thomae, whose drawing has been taken perhaps from Plukenet ([1691-1696], plate 211). In the old days these beans [seeds] have been used as a purgative, but as Valentinus and others including Linnaeus ([1749]) wrote, they [have no purgative value].

[to be continued next issue (September 99)]



**Batty About Sea-Beans**  
by Pete Zies  
613 Rodney Drive  
Altamonte Springs, FL 32701  
e.mail: basil1@juno.com

One of the favorite questions asked about the sea-beans we find on the beach is "If I plant one, will it grow and produce flowers and seeds?" Often the answer is "yes," but you would be surprised to learn that successful seed production might depend on the cooperation of a little flying mammal known as the bat.

Most tropical vines are pollinated by medium and large-sized bees. Others are pollinated by hummingbirds, hawk moths, butterflies or small bees. In *The Biology of Vines* it is explained that "An important exception is the large pantropic genus *Mucuna*, which is largely bat-pollinated (Van der Pijl, 1941; Vogel, 1958; Dobat, 1985), although there are also large bee-pollinated species like *M. rostrata* (personal observation)."

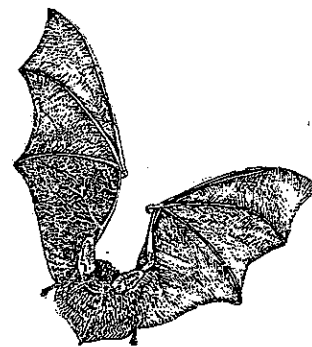
(Id. at 396), Forsyth and Miyata explain that

"...fruit and nectar-feeding bats have large, powerful eyes even though they are color blind. These bats also seem to have a good sense of smell. Accordingly, bat-pollinated flowers tend toward whitish colors, pale greens and creams that may be inconspicuous by day but are easy to see at night. They tend to be large, which also makes them easier to see in the dark. They often have an open shape, with a bushy mass of long, protruding anthers that rub pollen onto the face and chest of the bat when it shoves its mouth and long tongue into the flower in search of nectar. Bat flowers typically produce abundant nectar, which is important for sustaining the high metabolism of a flying mammal. Despite the abundance of sweet nectar, you would never be tempted to sample flowers the way children love to nip nectar-laden honeysuckles because bat flowers give off a musty fermented odor that most humans find unappealing. To restrict the visits of [other unintended] inefficient pollinators, bat flowers tend to open at night. Many last but a single night, wilting and falling in the heat of the morning." [Id. at 70-71]. The above quote is a generalization about the flowers of a number of tropical trees and vines, but enough of the indicators mentioned are present in the blooms of our sea-bean producing plants that we can be certain they are bat pollinated.



For example, in the illustration we see a common long-tongued bat, *Glossophaga soricina* feeding on the nectar of *Mucuna sloanei* flower cluster. These flowers are described by Geoffrey Herklots in *Flowering Tropical Climbers* (1976) as pale yellow buds which discolor quickly on opening. Although each individual flower may be slender and small, the flower clusters as a whole creates the large, light-colored target a bat searches for in the night. Similarly, famous U.S. botanist David Fairchild has commented that "of all messy looking flower clusters, the famous *Entada scandens* [Sea Heart] took the prize. The individual flowers were small and of a dirty green color and had nothing about them that was attractive." Dr. Fairchild failed to realize that although unattractive to humans, such flower clusters present a mouth-watering prospect to bats!

Charles Darwin once predicted the discovery of a large moth with a 10-inch tongue 100 years before it happened simply by noting the size of a particular jungle flower and then postulating the required size of its pollinator. Similarly, there are about 100 species of *Mucuna* worldwide, and several other sea-bean producing plants, but luckily bats are just as diverse. In Manu National Park in the Amazon, 120 of the 200 mammal species are bats! In *Neotropical Rainforest Mammals*, Emmons and Fear (1997) explain that "there are generally more species of bats in a given forest than there are of all other species of mammals combined; 39% of all mammal species in the region are bats. Worldwide, they are the second largest order of mammals, with about 950 species." [Id. at 52]. So next time you hear a fluttering of leathery wings in the night sky, don't forget to say "Thank you!"



Chinese consider bats good luck; bat medallions show the tree of life surrounded by five bats representing health, wealth, long life, good luck, and peace of mind. The Chinese character for bat (*fu*) also means happiness.

The saliva of the vampire bat in Central and South America is being developed to prevent heart attacks.

### Sea-Bean Dictionary by Pete Zies

**seaweed soccer:** The game of booting clumps of seaweed in the hopes that hidden sea-beans will roll out.

**sea-bean karma:** The remarkable principle by which virtuous observance of proper beachcombing etiquette often results in rewards from the sea. Example: (true story): On Saturday, April 10, I went beachcombing and while playing "seaweed soccer" dislodged a hypodermic needle and syringe. My options were: 1) to ignore it, 2) to throw it into the dunes, or 3) to find a way to carry it off the beach. Although I didn't want to handle it and risk getting stuck, I knew that was the right thing to do, so I carefully picked it up and bent the needle back on itself like a hairpin. I then dropped it in my bag to be thrown away properly. As soon as I had done that and stepped back from the seaweed clump, out rolled a brown hamburger bean! I could almost hear the ocean waves saying, "Thanks for doing the right thing!" The moral of this story is "Take care of the ocean waters, and they will take care of you."

### Updates from Pete Zies

The latest issue of National Wildlife magazine reports that large masses of floating wood scraps in the Pacific Ocean off South America went unidentified until the Center for Wood Anatomy Research in Madison, Wisconsin took samples, identified Asian woods, and concluded they were packing materials cast off from freighters.

The April 1999 National Geographic Magazine mentions that in August of 1995 Rich and Margo Tennis flew a plane onto the beach at Kamishak Bay just west of Augustine Island in Alaska, where another of the now famous plastic yellow duckies was found. (Do we have an estimated half-life of these things?)

One of our most energetic contributors; Xander van der Burgt from the Netherlands, has sent in 15 new species of drift seeds collected from the Cameroons in Africa. His efforts have greatly strengthened our collection's African seed section, and he has sent in more than all the other contributors *combined*! Thanks again Xander.

Mr. and Mrs. Kinsey of Apopka, Florida have kindly donated an unusual fruit collected from Pohnpei Island in the Caroline Island chain near Guam in the Pacific in the spring of 1985. It was identified to them as an "Ivory Palm Fruit" and there is nothing like it in the Gunn collection. Research has revealed that it is the Caroline Ivory Nut Palm, *Metroxylon amicarum*, not to be confused with the distinct South American Ivory Nut Palm *Phytelephas macrocarpa*.

Ann and Ian Robertson from Malindi, Kenya came stateside to visit relatives in Cleveland. No drift seeds were collected, but Ann had already sent, from Malindi and Watamu Bay in Kenya, a collection of seeds gathered in July and August of 1998. The package included 25 seeds of 13 species with several unidentified seeds -- adding to our growing collection of seeds from Central East Africa. Hope to see the Robertsons again at a future symposium!

"The least movement is of importance to all nature. The entire ocean is affected by a pebble."  
- Blaise Pascal

THE LUCKY BEAN by John V. Dennis, Sr.  
P. O. Box 578  
Princess Anne, MD 21853

On September 10, 1986, on the beach at Sandy Hook, New Jersey, which faces the New York City Harbor, I found a seed that I couldn't immediately recognize. About 1.5 cm long, 1 cm wide, well rounded on one side and flattened on the other, it had dark mottling on a light surface. It looked as though it had long been exposed to water and the rays of the sun after stranding on the beach. I soon recognized it as a seed of the castor-bean (*Ricinus communis* L), a plant whose original home was Africa, but which has been widely introduced into temperate and tropical parts of the world.

There is considerable disagreement regarding length of time seeds can remain afloat. Guppy (1917) stated that the seeds can remain afloat only five to ten days. In my flotation tests, using seawater, I noted a maximum flotation of about five months. On the other hand, G.C. Cadée (1988) states that three seeds collected on a beach at Texel, an island off the coast of the Netherlands, have been floating for four years and are still floating. But Cadée (pers comm), speaking of these three seeds, states, "I still have some old seeds collected from the drift; they still float now after 15 years."

In his paper, Cadée states that castor-bean seeds are not uncommon on the beaches of the Dutch coast and sometimes germinate in the strand line. He added that they have been reported from the Rotterdam Harbor area and along the Rhine River. Imported for industrial purposes, they are lost from shipping. It seems reasonable to believe that imported seeds are lost from shipping elsewhere, including New York Harbor and port cities in Japan.

Cadée (pers comm) states that he has "collected *Ricinus* on beaches in Indonesia (Bali and Ambon)", and that "a friend of mine collected one seed on a beach in Madagascar..."

Striking differences in flotation times, conducted by those who have tested these seeds, can perhaps be explained by the age of the seeds tested. Those fresh from the plants have short flotations; those that are well cured float much longer. Long distance floaters may appear on beaches almost anywhere that ocean currents approach coast lines.

H.N. Ridley (1930), in his book on plant dispersal, provides three records of stranded or floating castor-bean seeds: "They are recorded by Keating as drifted upon Cocos-Keeling Island, and the plant appeared in Krakatau, undoubtedly from sea-borne seed in 1919. Copeland found it floating in the sea off South Trinidad."

Ridley adds that, "Martins kept seeds floating for 93 days in sea-water, and afterwards raised plants from them."

A present day botanist, Hiroki Nakanishi (1987) reports that castor-beans frequently wash ashore on the coasts of central and southern Japan. Many times, he states, the seeds sprout and the plants grow along the drift line. He adds that the seeds are capable of floating for three months and often retain their viability.

Still another report of large numbers of castor-bean seeds washing ashore comes from Cornwall on the southwest coast of England. Charles Nelson (1978), formerly with the Glasnevin Botanical Gardens in Dublin, has received reports of castor-beans from Newquay, St. Ives, and elsewhere in Cornwall. Oddly, the Cornwall records are the only ones that Dr. Nelson has for Britain and Ireland.

Records from Florida have kindly been turned over to me by Peter Zies, who in turn obtained them from Dr. Gunn. The records include a damaged specimen with the label, "Florida beach, Atlantic coast," and another reporting six fresh-looking specimens with the label, "Joynes, Vero Beach, FL (beach garbage)."

Regarding the last record, the castor-bean is not eaten and therefore cannot be classified as garbage. More likely, these seeds came from plants growing on or near the beach. If true, the plants could have come from seeds that stranded on the beach.

It should be pointed out that castor-bean seeds contain a powerful toxic substance called ricin. According to Pamela North (1967), two to four seeds, if ingested, can seriously poison a human, eight usually being fatal. Poisoning and death from ingesting the seeds have occurred in waterfowl, domestic poultry, horses, sheep, and cattle.



Not a bean or legume at all, but a member of the euphorbia family (Euphorbiaceae) noted for poisonous members, the castor-bean looks something like a member of the bean or legume family. In Hawaii, the seeds of the castor-bean are used in making necklaces and bracelets. But after the seeds have been exposed to saltwater and the harsh conditions of the beach, they are apt to darken and become nondescript in appearance. Such seeds are easily overlooked.

I wish to thank Gerhard C. Cadée, Hiroki Nakanishi, and Peter Zies for their help in obtaining literature sources.

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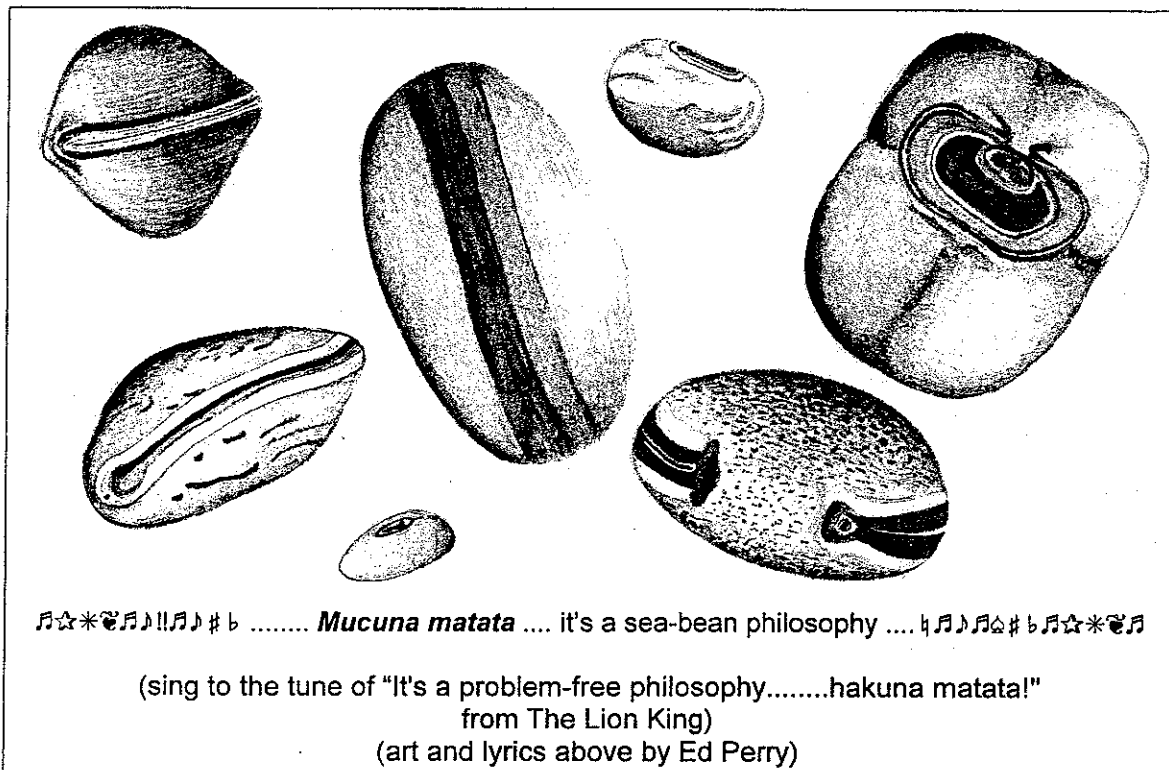
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[eds note: A typing error slipped into John's Lucky Bean column in our last newsletter (Vol. 4 No. 3, page 8 of "Records of Ivory Seeds..."). The last line of the third paragraph should have read, "...does not contribute to West Indian drift."]



"Shore gatherers are the most observant of beachgoers. The shell finders always seem to be more romanticized. But anyone who can pick up a hamburger bean and understand something of the Gulf Stream, Brazilian shoreline ecology, nature and the universe has enjoyed a profitable day on the beach." - Mark Lane in The News-Journal (Daytona Beach), Oct 26, 1997

## BEACH BYTES

Text and illustrations by Ed Perry

1763 Bruman Terrace

Melbourne, Florida 32935 USA

(407) 253-2753

e-mail: BEReptiles@juno.com

So much has happened since the last newsletter. Seabeans have become a big part of everyday life for me. The places I go and the people I meet all seem to be intertwined in this wonderful web of life that revolves around beaches and drift seeds.

### People and Places

I was lucky enough to attend the 19th International Sea Turtle Symposium held this year on South Padre Island, Texas, March 2 - 6. I hoped to find the elusive brown nickerbean, which I understood from the Gunn/Dennis *World Guide* to be more common on Gulf Coast beaches. It was true! While at the symposium, I met fellow Drifter Scott Boykin, also an avid beachcomber and sea-bean nut. In our spare time, Scott and I combed as much of the beautiful Texas beaches as we could, and it paid off. Together we found several hamburger beans, sea hearts, and *Diocleas*, plus some rare sea-beans like a Mary's-bean each, an *Oxyrhynchus*, some boxfruits, and YES, 6 brown nickerbeans between the two of us. Scott was able to find only 2 gray nickerbeans, showing us that the browns were definitely more common, at least at that time, lucky for us. Thanks Scott, for a memorable excursion, and a lifelong friendship!

I also connected with Andreas Schwartz and Trish Arink of the Padre Island National Seashore who are both interested in sea-beans that they find on their beautiful stretch of natural beach. We shared I.D.s of seeds and talked about the reprinting of the Gunn/Dennis *World Guide*. Trish operates concession sales and thinks she could sell copies of the book to locals and tourists alike.

### Nickernut Chat

Since our last newsletter, I have learned some about nickerbeans. Wayne Armstrong, who has a wonderful web page on drift seeds, talks about the yellow nickerbean being just as common throughout the tropics, if not more than, the gray nickerbean. He explains, however, that their buoyancy in seawater is not that of the gray nickernut. Could this be why they are such a treasured find on distant shores? Perhaps we could learn more on this from John Dennis and his buoyancy tests.

My first attempt to sprout one of my brown nickerbeans failed in a rotten seed, while Cathy Yow successfully sprouted a second seedling, now more than 12 inches tall. I am sending one of my brown nickerbeans to Gwilym Peter Lewis of the Royal Botanical Gardens in Kew, England, who will also try to sprout one of these mystery plants in their huge atrium. Gwil is an expert on plants and knows quite a bit about *Caesalpinia*. He is excited about helping our group identify this mystery drift seed. It might be possible that this plant has yet to be described.

Ed Perry 1998

The gray nickerbeans at the Sebastian Inlet, Florida have just completed their fruiting cycle for the year and their green prickly pods have now turned to brown and are beginning to pop open in the springtime warmth of the sun. With a nice wind, the pods rattle their precious gray orbs inside. Perhaps the next high tide will carry some out to sea, sending them off to the English Coast.

### Rare Finds

Probably the most unusual find I can report to you is Cathy Yow's cypress knee that she recently found on the Galveston, Texas beaches. At first Cathy didn't know what it was when she suddenly realized it had to be a cypress knee. She has turned it into a beautiful lamp, I hear. Has anyone out there ever seen or heard of a cypress knee washing up on a coastal beach? (Cypress knees are cone shaped pieces of cypress tree root systems that the tree uses to "breathe" and stabilize itself in swampy, flooded conditions.)

Besides all the other cool beans I found in Texas, I also came across a *Mucuna* of a different sort. Actually I found three of them, and interestingly enough they were all relatively close together on the beach, and no more were seen for miles of walking. They appear to be very flat, thin hilumed, horse-shoe shaped *Mucunas* (shown right). All three were dark black and appear to have a swirling pattern on the seed coat resembling a corolla. Has anyone ever seen one of these?



Just before the new year, Rose Anne Long of Melbourne Beach, Florida, and her husband combed the beaches for one hour at sunrise and found 22 hamburgers, 10 sea hearts, and a Mary's-bean. Other notable finds are Blair Witherington's and Chris Koppel's (both of Melbourne Beach) first Mary's-bean each. My wife Beth scored a Mary's-bean, a brown nickerbean, and a black *Mucuna* in February (as shown left: *Mucuna nigricans* or *M. holtonii*). I was lucky enough to come across a beautiful bay bean of a different kind, a *Canavalia nitida*. This bean is a bright wine red color, and it is the most beautiful bean in my collection! One morning at the inlet in January I was blessed enough to find three Mary's-beans lying close together. All were found in about 15 minutes.

### Crustacean Tags

Curtis Ebbesmeyer was delighted to receive the package of some 70 plastic tags from me this last week. Thanks for all those who donated their finds. Some tags of interest were two salmon aquaculture tags, probably from Canadian waters, some Florida lobster pot tags that may have circled the Atlantic twice now, and one curious tag that Curt thinks might have come from Oregon. Now we wonder how this tag made it to the beaches of Florida.

### Beach Reports

Once again, at the time of this writing, Florida's East Coast beaches are being dotted with sargassum weed and Portuguese man-o-war jellyfish! The beans aren't as plentiful as they were back in December, but none the less some are there. On March 31st, Phil Rand and myself combed a couple of miles after work for 18 hamburgers, 3 sea hearts, 2 *Diocleas*, and a candlenut. On April fool's day, I walked only about 10 minutes on the beach, and it paid off with one keeper seed being a Mary's-bean.

Beachcombers on the England coast report finding more beans last month than they have ever seen in 20 years of beachcombing! What is up with this bulge of beans? Could it be the same bulge we saw come by Florida's coast back in December? Perhaps all the weather that hit Central America and the tropics last summer has filled the ocean with a multitude of seeds that are floating in a large group around the gyre. Just pray the winds blow the right directions when they happen to be off of YOUR coast.

### Final Thoughts

The 2-year old *Mucuna* vine in my backyard is flowering for a second time, and the pods it produced from the December blooms are now turning brown. It was able to survive two nights at 31 degrees, and dropped a few leaves later. Maybe, at least mature vines, are more cold tolerant than we think. I have also added a sprouted Mary's-bean, a *Dioclea*, and a sea heart to my vine garden. Let's hope Cathy Yow's brown nickerbean seedling thrives and makes it to flowering, and that Gwil Lewis can help us identify this 30-year mystery.

Please e-mail or snail mail your beach reports, rare finds, and interesting news to me, and until next time, keep your toes in the sand, and your eyes on the wrack line!

"Every scrap of biological diversity is priceless, to be learned and cherished, and never to be surrendered without a struggle."  
- Edward O. Wilson in *The Diversity of Life*

***Mucuna* and *Dioclea* from Lanzarote (Canary Islands)**

by Gerhard C. Cadée and Sytske Dijkse  
Neth. Inst Sea Research and EcoMare, Texel  
Cadée@NIOZ.NL

The Canary Islands are unproductive from the standpoint of tropical drift disseminules (Gunn & Dennis, 1976, p. 35), although these islands are reached by the Canary Current, a southern branch of the Gulfstream. Guppy (1917, p. 38), who spent several days in examining the north coast of Tenerife, found no tropical drift seeds, during visits to the beaches east of Orotava and on the east side of Point Hidalgo, where a considerable amount of oceanic drift such as *Spirula* shells and Portuguese men-of-war *Physalia* was cast on shore.

During a visit September this year to the NW coast of the island Lanzarote (Canary Islands), Sytske Dijkse was fortunate to collect two sea-beans, which in our opinion might be tropical drift seeds from the new world, because they were collected among real oceanic drift such as hundreds of fresh *Spirula* shells, a few *Janthina* shells and *Veleva*.

One was easily recognisable as *Dioclea reflexa*. It matches description and fig. 55 E of Gunn & Dennis (1976), is D-shaped in circumference (28.5 x 23.9 mm) and 16.6 mm thick. It looks very similar to the first Dutch specimen of this species collected on Texel in 1992, also by Sytske Dijkse (see Cadée, 1995). Unfortunately *Dioclea reflexa* also grows on the African continent (Gerhard C. collected a number of these seeds on the Atlantic coast of Zaire). So this species cannot be used to prove a Gulfstream provenance.

The other is a *Mucuna* sp. *Mucuna*-beans are always somewhat difficult to identify to the species level. It is almost circular in circumference (26.1 x 28.8 mm), its thickness is 15.6 mm. The hilum is black and its width varies from 3.7 - 4.2 mm. The colour is monochrome dark-brown with a light-brown border along the hilum, its surface is not smooth, but slightly rough. During a visit to Kew Gardens (Richmond, London, UK), Dr. Bernard Verdcourt (Kew Herbarium) was so kind as to help me to identify this specimen by comparison with seeds in the Kew collections. We came to the conclusion that the specimen is a *Mucuna flagellipes*. This species also occurs on both sides of the Atlantic, so again, unfortunately, it gives no clue to the possible origin of these seeds.

Based on drift bottle experiments in the Atlantic mainly by the Prince of Monaco, Guppy (1917 p. 483, note 27) already suggested that tropical drift seeds should be able to reach the Canary Islands. However, Guppy (1917, p.1) also noted that most of the littoral plants that constitute the principal sources of the drift are common to both sides of the tropical Atlantic. If the seeds came from the New World, they would have been longer in the water than if they came from nearby Africa. This suggests they should have time enough to become overgrown with algae, barnacles, goose barnacles, bryozoa, etc. Most objects either natural (e.g. cuttlebones of *Sepia*, see Cadée, 1997a,b) or artificial (e.g. plastics, see Winston et al., 1997) floating in the sea become rapidly overgrown. Such overgrowth is sometimes found on sea-beans (see Gunn & Dennis, 1976, fig. 12), but in our experience it is far more common to collect drift seeds without such a coating. In an earlier paper I suggested that the outer wall of drift seeds may have some organic antifouling compound (Cadée, 1996), preventing this overgrowth. Recently, Zies (1997) mentioned toxic substances in the seed coat of *Mucuna*, such as L-Dopa. These are produced to prevent consumption, but they might be also poisonous to fouling organisms. This suggestion of antifouling is testable, and some experiments at the Netherlands Institute for Sea Research are planned for the near future, for which Gerhard C. should like to receive some fresh *Mucuna* seeds from readers of "The Drifting Seed." Please contact him if you have some spare material for him!

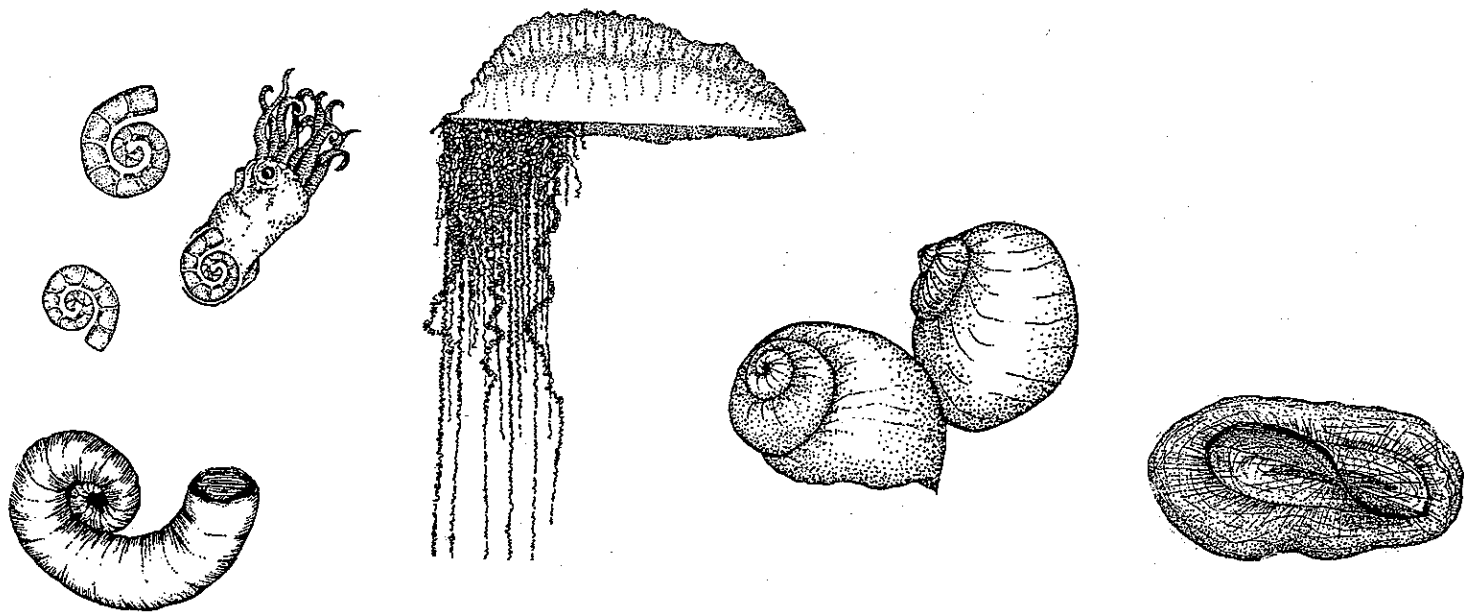
It follows that presence or absence of marine organisms on sea-beans is probably not related to the time they drifted in sea, (unlike in *Sepia*, see Cadée, 1997 a,b), but to their poisonousness. Absence of marine organisms on the Lanzarote drift seeds will not help us in unravelling the source of these seeds. However, whether they came from nearby Africa or far away America, these are the first tropical drift seeds recorded from the Canary Islands as far as we know. The specimens are stored in the collection of the first author.

Many thanks are due to Bernard Verdcourt for his help in Kew and to Pete Zies for extensive discussions by email.

"There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle."  
- Albert Einstein

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*Spirula*

*Physalia*

*Janthina*

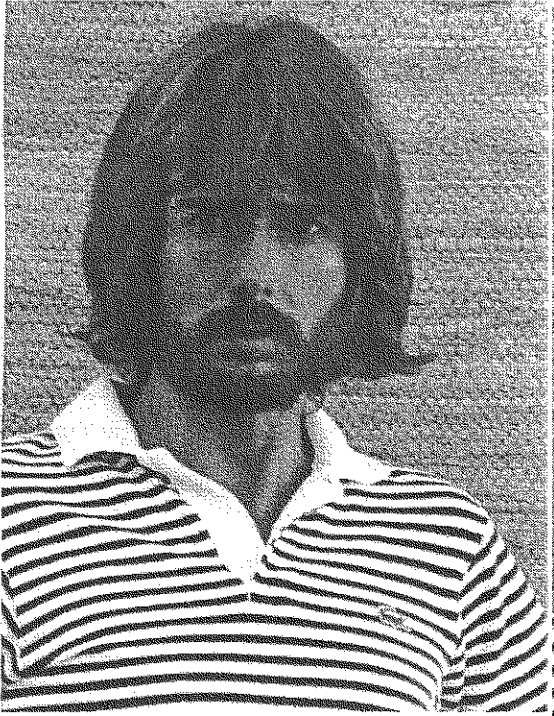
*Velella*

"Scientists at work have the look of creatures following genetic instructions; they seem to be under the influence of a deeply placed human instinct. They are, despite their efforts at dignity, rather like young animals engaged in savage play..."

- Lewis Thomas in *The Lives of a Cell*

## Sea-Beans in Daytona Beach, Florida

By Ron Reininger  
1001 South Peninsula Drive  
Daytona Beach, FL 32118



In 1992, I moved from the Chicago suburbs to Daytona Beach. From previous vacations to both coasts of Florida, I was familiar with drift seeds but not in getting them to grow. My interest is in tropical plants and I wanted to see what would grow from the seeds I found washed up along the area beaches. My copy of *World Guide to Tropical Drift Seeds and Fruits* (Gunn and Dennis 1976) helped me to identify whatever I could find.

The area from which I obtained seeds was Flagler Beach south to Ormond Beach and Daytona Beach down to Canaveral National Seashore (to about Turtle Mound). The seeds that I found are not necessarily representative of this part of Central Florida but just the ones that had washed ashore when I happened to be "seabeaming."

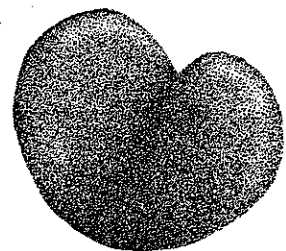
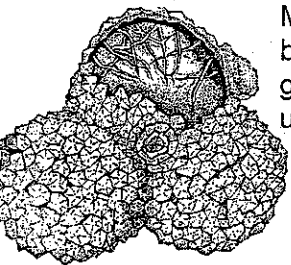
The most common seeds that I found were tropical almonds (*Terminalia catappa*) which are edible and taste like a regular almond but are a lot smaller. These sprout easily and make a tree with rather large leaves. They don't like the cold but will survive with protection.

Hamburger beans and sea hearts are not uncommon but take some searching. A local nurseryman who is in his 80s told me that a long time ago, buckets of hamburger beans could be found along the beaches. I found my most perfect heart-shaped sea heart near the steps of a hotel on the beach here in Daytona. The tourists don't seem to notice any kind of drift seeds at all. I was able to get a hamburger bean vine to grow up a cedar tree to about 20 feet until the cold killed it. So far I've had only a couple of sea hearts sprout but wasn't able to get them to grow. Most are not viable but dry inside. They seem to need hot weather to do well.

Hog plum (*Spondias mombin*) has sprouted and made a small tree but manchineel (*Hippomane mancinella* L.) and blister pod seeds (*Sacoglottis amazonica*) have not. Red, white and black mangrove seeds will all sprout. Gray nickernut (*Caesalpinia bonduc*) has taken over one end of my yard. It is from a seed that I found on the beach. The botany books show that it is native to this area but I haven't seen it growing locally. I have found only one Jamaican navel spurge (*Omphalea diandra* L.) seed and four starnut palm (*Astrocaryum* sp.) seeds but kept them all for identification.

Sea coconut (*Manicaria saccifera*) seeds are common along the beaches here and are found in various stages of "undress" - from having the covering fully intact to completely bare and looking like a dirty golfball. None of these seeds seem to be viable. Coin plant (*Dalbergia* sp.) seeds also seem not to have survived the journey. Laurelwood or beauty-leaf (*Calophyllum* sp.) seeds wash up on the beaches intact but so far have not germinated for me.

Most of the plants from drift seeds, with the possible exception of hamburger beans and sea hearts, may not be spectacular to look at but the joy of growing plants from seeds that have floated in the Gulf Stream and washed up on the beaches is reward enough for the small effort involved.



"Among the greatest puzzles and wonders of natural history are the long and circuitous routes of migration followed by many animals. Some lengthy movements make sense as direct paths to favorable climates from season to season; they are no more peculiar than the annual winter migration to Florida of large mammals inside metallic birds."  
-Stephen Jay Gould in *The Panda's Thumb*.

## NEWS AND NOTES

From **William Blazek in Juno Beach, Florida**: "As a native Iowa farm boy who spent his 30-year professional career in the Washington D.C. area and recently retired to Florida, I have ... alas ... become smitten with "walking the wrack" here in Juno Beach and collecting each and every sea bean (among other items) I can find! ... I've recently planted two sea beans. Their names are 'Spot' and 'Dot' and they're growing like ... well, sea beans!"

Congratulations to **Scott Boykin and Stratton Pollitzer of Gulfport, Florida**, to be married in May at St. Helena Island, South Carolina!!

Thanks to the **Chinquapin Newsletter of the Southern Appalachian Botanical Society** for spotlighting The Drifters!

We received several messages from **Nick and Jane Darke in Cornwall, UK**: "I live on the north coast of Cornwall, England and have been a beachcomber all my life. I thought you might be interested to know that we have had washed onto our beaches, since 26th Feb this year, a phenomenal number of drift seeds. My wife and I have picked up, so far: 36 sea hearts (*Entada*), 44 bull's eyes (*Mucuna*), 9 sea purses (*Dioclea*), 7 grey nickernuts (*Caesalpinia bonduc*), 3 starnut palm seeds (*Astrocaryum*) 1 bay bean (*Canavalia rosea*), 1 coconut (*Cocos nucifera*), 15 morning glory (*Ipomoea alba*) ... I notice you have information about the Lego bits washed up. We get all these (the container went down near here) but we also get **black Lego® dragons**. They are about 3-4 inches high and free-standing."

**Dr. Curt Ebbesmeyer**, our long-time Drifter from **Seattle, Washington**, has been mentioned and featured in too many magazine and newspaper articles to list here, but we want to sum up that the **yellow plastic duckies** are gaining fame and are still being found on west coast shores. East coast beachwalkers are still on the look out for the **Lego® toys**. Contact Curt at [www.beachcombers.org](http://www.beachcombers.org).

Thanks to **Larry Groshart (aka "Johnny Coconut Seed") in Ft. Lauderdale, Florida** for the photos of the "tree branch with insects." Larry needs someone to identify the unusual "egg casings" within the branch. (Ed Perry suggested the chambers are the plant's "grow-fast" tactic providing strength and support without weighing the plant down.)

Congratulations to **Marielle DuToit in Ormond Beach, Florida**, a sixth-grader at **St. Brendan School**. Marielle won her school science fair with a project titled **Ocean Drift Seeds**. In addition to an actual mini-beach with wrack items, she created a presentation board with a globe through the middle showing the world's currents.

**Allison Fick**, a fifth grader from **West Palm Beach, Florida**, also collects sea-beans and also won at her science fair for her sea-bean project. Congratulations Allison! She was able to successfully sprout several sea-beans which she says are taking over the Social Lounge at her school.

**Murray Gregory**, Geology Professor at the **University of Auckland, New Zealand** will retire in 2000 and would like to attend our Sea-Bean Symposium. Murray has been collecting beach debris, including drift seeds, since the 70s, while researching environmental problems created by plastics and pollutants.

**Sea-bean polishing update**: For all who have been asking how to shorten the time spent on the grit cycle while tumbling sea-beans, here's an update from our lapidary, **Jack Hoskins in Melbourne (U.S.)**. Jack believes that using silicone carbide preforms in a barrel tumbler will cut the grit time considerably and prepare the beans nicely for the polish cycle. Cathie Katz still prefers sandblasting sand in a Tumble-Vibe. Any other suggestions?

**Cathie Katz** presented an author's talk about sea-beans with **Cecelia Abbott at The Nature Conservancy at Blowing Rocks Preserve in, Hobe Sound, Florida** in January. The support from the staff at Blowing Rocks was wonderful and they have asked us to set up a full display of shore items at their facility from July through October. The Nature Conservancy includes a native plant nursery, butterfly garden, potting shed, education center, outdoor laboratory, and a long stretch of beautiful beach with 125,000-year old "blowing rocks." Anyone visiting Palm Beach County in Florida would love this remarkable Nature Center (561-744-6668). Cathie and Cecelia were also featured as experts in a beachcombing TV show for NatureScope produced by **Susan Chadburn of Palm Beach County Department of Public Affairs** and **Steve Bass from The Gumbo Limbo Nature Center, in Boca Raton, Florida**.

New reader **Robert Patterson from Hamilton Parish in Bermuda** mailed a box of sample seeds with a letter, saying: "I have only found 2 Mary's-beans - both this year. The starnut palm and nickernut are not very common but I have found over 250 sea-coconuts and 150 sea hearts since I got interested in 1995. The red and black mangrove and Kumani could be of local origin as they do grow here. So does the West Indian almond but this example has obviously been at sea at least 3 years judging by the size of the gooseneck barnacles."

After attending our Sea-Bean Symposium in October, **Mary and Bob Reed from Annandale, Virginia**, continued to collect sea-beans through the winter. In March they said, "No beans, no shuttle launches: dullsville. We're going back to Virginia." Listen up, Mary and Bob: Florida beaners have been finding scads of Mary's beans among many many other keepers since you left!. (We hope to see the Reeds again in October for the opening of sea-bean season.)

**Ron Reininger from Daytona Beach**, our correspondent on page 14, wrote in a February letter, "My *Mucuna Bennettii* seed that I started last year (from **Hudson Seeds in California**) are vines several feet and doing well." Ron sent us a catalog of seeds from: **J.L. Hudson; Seedsman, Star Route 2, Box 337, LaHonda, CA 94020**.

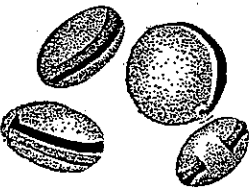
Welcome to **Jose Antonio Lopez Saez in Madrid, Spain** whose article on sea grasses in the Mediterranean will be in our next issue.

We received an update from **Dr. Bernard Zonfrillo in Glasgow, Scotland**: "I was able to track down the whereabouts of the Jamaican Coco-de-mer tree in Kingston, last month. Sadly it was apparently downed by Hurricane Gilbert back in the 80s. It was located at Hope Gardens in Kingston. The Coco-de-mer was a male tree, hence the lack of fruit."

[www.seabean.com](http://www.seabean.com) has been updated. Check it out.

# Simple Guide to Common Drift Seeds

(Illustrations by Cathie Katz and Pamela J. Paradine)



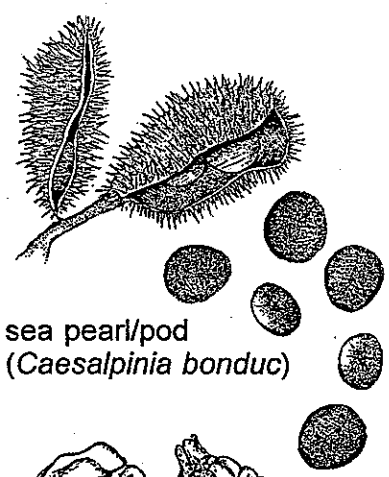
hamburger bean  
(*Mucuna* spp.)



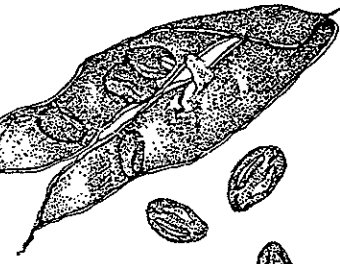
starnut palm  
(*Astrocaryum* spp.)



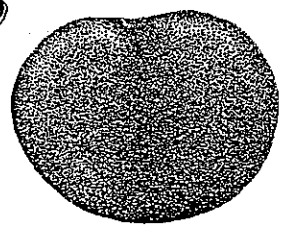
country almond  
(*Terminalia catappa*)



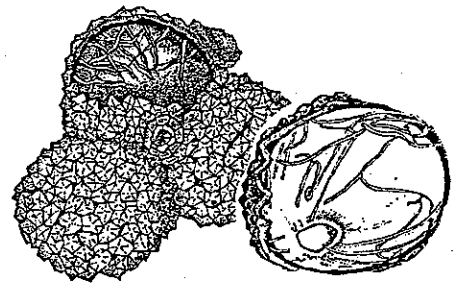
sea pearl/pod  
(*Caesalpinia bonduc*)



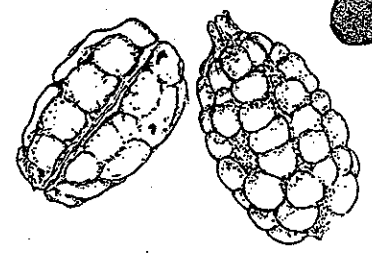
bay bean/pod  
(*Canavalia rosea*)



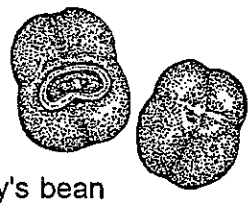
sea heart  
(*Entada gigas*)



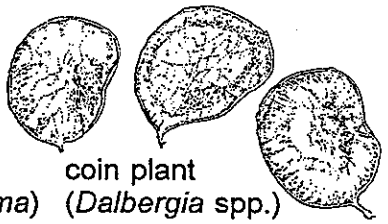
golfball/pod  
(*Manicaria saccifera*)



hand grenade  
(*Sacoglottis amazonica*)



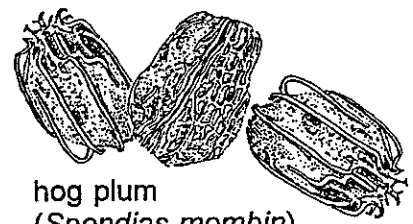
Mary's bean  
(*Merremia discoidesperma*)



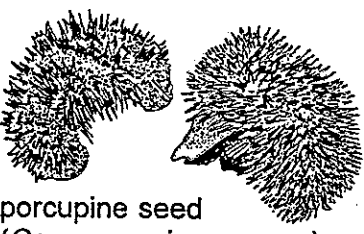
coin plant  
(*Dalbergia* spp.)



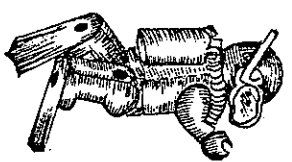
sea purse  
(*Dioclea reflexa*)



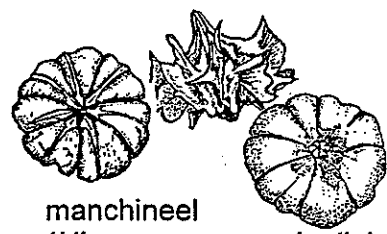
hog plum  
(*Spondias mombin*)



porcupine seed  
(*Caryocar microcarpum*)



Lego® diver  
(*Aquanautium legoii*)



manchineel  
(*Hippomane mancinella*)

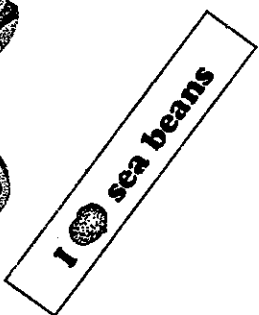
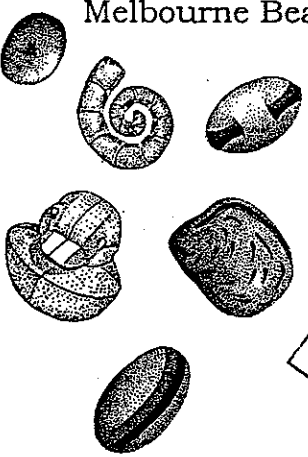


white/black/red mangrove  
(various genera)



## The Drifting Seed

PO Box 510366  
Melbourne Beach, FL 32951



stamp  
here