

The Drifting Seed

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THE DRIFTING SEED

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

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Ed Perry, Editor and Publisher

Dr. Charles (Bob) Gunn, Advisor

Gerhard Cadée, Raymond van der Ham & Wim Kruiswijk, Columnists

Paul Gainey, Columnist

Roger Hewitt, Columnist

Ed & Biddy Jarzembowski, Columnists

Ms. Margie Mitchell, Columnist

Koen Verschoore, Columnist

Paul Mikkelsen, Web Site Manager for www.seabean.com

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The 19th Annual International Sea Bean Symposium was held at the Cocoa Beach Public Library,
October 17th and 18th, 2014.

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For Newsletter Submissions, Donations, or Seed Identification:

Contact: **Ed Perry**, Seaheart88@aol.com

1770 Mason Terrace, Melbourne, FL 32935, USA

Or e-mail: seabean@seabean.com, or visit: www.seabean.com

18th Annual International Sea-Bean Symposium Review
October 18 and 19, 2013, Cocoa Beach, Florida
by Margie Mitchell, Margie.Mitchell@cfl.rr.com

Cathie Katz founded the Seabeen Symposium in 1996 as an educational forum for the exchange of knowledge about everything to do with our oceans and beaches. If she could have attended this year's symposium, she would have been overwhelmed with pride and pleasure at the slate of speakers that Ed Perry lined up. We had the most presentations ever at a symposium. Wow! Did we learn a lot! Our speakers took us from coast to coast, and from the macro- to the micro-view of all things beachy.

Here's a roundup:

"Basic Beachcombing and Sea-Beans" kicked things off as usual, with an overview of how sea-beans and other curiosities drift to our beaches, and what kinds of things the curious beachcomber might expect to find.

We then took a REALLY close look at the beaches under our feet with Terri Kirby Hathaway's "Sand: Hold a Mountain in Your Hand." Terri gave us a close-up analysis of the many different shapes and colors of the microscopic components of sand, as well as the origins and composition of various types of sand. She summed it up nicely with these lyrics from the Banana Slug String Band (yes, she hummed a bar or two):

I've got a mountain in my hand from the rain-washed land
Down by the sea now is where I stand
With this mountain in my hand trying to understand
Oh, oh wonderful sand!

Dr. Blair Witherington gave us a turtle's-eye view of our oceans with "A Drifter's Life at Sea." He took us on a journey with a sea turtle hatchling, from its emergence from the nest and scramble out to sea, to its travels around the ocean currents. We had a look at its home in the sargassum and some of the things it might encounter during its journey to adulthood, some natural wonders and some not so natural.

Later Friday afternoon we heard a story about a different sort of journey, from Suzy Pappas of Coastal Cleanup Corporation. "From Sea-Beans to Sea Turtles" told how Suzy and her husband George started off as sea-bean hunters looking for a remote place to get the best beans in Biscayne National Park. They found their way to Elliott Key, which looked like the perfect spot because it is only accessible by boat, but they quickly discovered that it was completely trashed with marine debris. Not only could they not enjoy the beach for sea-bean hunting, but they also learned that it was a former sea turtle nesting site, where nesting had dropped off to zero as the debris accumulated. George and Suzy began by carrying away what they could in their small boat, and went on from there to found a non-profit corporation dedicated to marine debris cleanup, which has accomplished a small miracle. Coastal Cleanup Corporation, with several grants and much hard labor, went to work to clean up the beaches of Elliott Key. After 20 cleanups, with 229 volunteers who worked 1,815 hours, and over 5 tons of debris removed, the sea turtles have returned to Elliott Key! Nesting went from zero successful nests in 2011 to 16 successful nests in 2013. This amazing story of what two people with a vision and a passion can accomplish inspired everyone in the room. Who knows what someone who heard it might set out to do next?

On Saturday, Dr. Tonya Clayton led off with "How to Read a Beach: An Ambler's Guide to the Beach Beneath the Beans." We can all look at the beach with new eyes now, having learned how to identify the effects of wind, waves, animals, and humans, on a scale both large and small.

Next up was David McRee with his Beach Survival Guide. Every beachgoer can benefit from his practical tips on how to deal with hazards such as rip currents, jellyfish, stingrays, and sharks. If you missed the presentation, David's free e-book is available online at <http://www.beachhunter.net/beachsafety.htm>.

Dr. Curt Ebbesmeyer presented his annual update, "Flotsam in Florida: Arrivals from Around the Atlantic," with tales of all manner of man-made oddities that turn up on our beaches. Be sure to report any unusual finds to Curt at curtisebbesmeyer@msn.com for his next talk.

Terri Kirby Hathaway returned on Saturday afternoon with, "Beachology: The "Hole" Story." The holes in question ranged from those little bubbly holes in the wet sand at low tide to the cannibalistic signatures of certain mollusks drilled into the shells of their relatives. Another new way to look at the beach!

Dr. Alan Rammer wrapped things up with, "North West Beachcombing from A to Z" on Saturday evening. We heard about glass fishing float hunting, bird watching on the Pacific Flyway, gray whale migration, fossils, shipwrecks, and Japanese tsunami debris (Hint: warehouses full of glass floats were lost in the tsunami). Beachcombing in the Pacific Northwest is so different from what we are accustomed to in Florida! We're all buying tickets to Seattle ASAP.

Exhibits this year included:

- Cathie Katz's sandbox and books, including an exclusive tote bag with some of Cathie's previously unpublished artwork.

- The return of the sharing table, which proved popular last year. This year it overflowed with sea-beans and shells, including a 5-gallon bucket of brain beans from Texas, donated by George Wolf.

- Alan Rammer, our keynote speaker, with books and ceramic sea-bean sculptures by French artist Severine Cadier.

- Terri Kirby Hathaway with her new book, "North Carolina's Amazing Coast," a very cool A to Z book for all ages.

- The Coastal Cleanup Corporation's thought-provoking marine debris exhibit.

- Jim Angy's nature photography.

- Curt Ebbesmeyer's usual trash assortment, some of which he was wearing around his neck.



- Alice Lowe's sea-bean polishing display, including her latest designs of sea-bean art.

- Nan Rhodes' Sea-Beans From Exotic Lands jewelry display.

- David McRee with his new book, "Beach Hunter's Florida Gulf Beaches Access Guide, Second Edition."



- Tonya Clayton with her book, "How to Read a Florida Gulf Coast Beach."

- First-time exhibitor George Wolf, all the way from Texas, with more display boards than we could fit into the library and lots of giveaways. Of course, being from Texas, he had a special display of unusually large beans.



- Blair and Dawn Witherington's books and interesting beach finds, this year including a hand-held microscope connected to a computer monitor, where visitors could examine sand samples and other tiny things.

- Bill Blazek's ever-growing collection of incredible hand-polished sea-beans. Not to be outdone by Texas, Bill also had a "Size Matters" display of some of the largest beans he's found in Florida.

This year's Bean-a-Thon participants found the pickings pretty slim after a fall of very summer-like conditions in Cocoa Beach. A few intrepid beachcombers managed to win some awards nevertheless:

- Most Species: Phyllis Hamilton, 21 species

- Youth Award: Avery Cranston, 18 species; honorable mention to Emily Hamilton with 12 species including 2 spirula, a yellow flamboyant, and a bloodwood



- Cool Bean: Terri Kirby Hathaway (sandbox tree seed)

- Non-Bean: Steve Robertson (Whale shark! OK, it was plastic and 4 inches long.)

The Odd Bean contest had a new non-bean category this year. Suzy Pappas took the award in that one for Smallest Sea Pig. Other winners were:

- Reddest Seaheart: Elaine Norton
- Thickest Banded Mucuna: Bill Blazek
- Plumpest Sea Purse: Bill Blazek

Our new t-shirt designer, Steve Asbell, gave us a winner. His design “Drifting to a Beach Near You,” was so popular that the shirts nearly sold out.

As always, many, many thanks to everyone who helped make the symposium a success. We couldn't do it without a group effort. Just to name a few:

- Marge Bell, Brenda Spletter, and Alice Johnson fed us well and often.
- Ray Dickinson and Ellen Morton from the Cocoa Beach Library gave us so much unseen support that I can't even begin to enumerate it all.
- All the volunteers who worked at the hospitality table, greeting visitors and sharing their enthusiasm.
- Everyone who filled the raffle table with amazing creations.
- And everyone who helped set up, tear down, and keep things humming along throughout.

Next year's symposium is already on the calendar. We'll be back at the Cocoa Beach Library October 17 -18, 2014, mark your calendar and join us. See you then!



Black Walnuts from the Dutch Coast

Gerhard C. Cadée, Raymond van der Ham & Wim Kruiswijk
(gerhard.cadee@nioz.nl)

The Black walnut *Juglans nigra* is mentioned in several of the well known guides for tropical drift seeds because it is collected on USA beaches that also regularly receive tropical disseminules (Gunn & Dennis, 1976; Perry & Dennis, 2003). However, *J. nigra* is not a tropical, but a temperate tree. *Juglans nigra* has a wide range in the eastern half of North America and has also been introduced into the more western sections of the USA. It is also introduced in parks and gardens in Europe. Its fruits are transported by the Mississippi and other Gulf Coast rivers to the Gulf of Mexico (Gunn & Dennis, 1976; Perry & Dennis, 2003). West coast rivers transport them to the Pacific and East Coast rivers such as the Delaware directly to the Atlantic (Ebbesmeyer, 1997; Dennis, 2000).

Dennis (2000) gave 6½ years as maximum flotation time and expected black walnuts to be able to reach the beaches of western Europe. Nelson (2000) mentions only one specimen from European coasts found on the Channel Island Jersey in the early 1990s. Perry & Dennis (2003) wrote that maximum floatation should be long enough to cross the Atlantic Ocean and they suggest that “the endocarps should be looked for on European beaches”. This is what we did. Brochard & Cadée (2003) reported 2 from France (Brétignolles sur Mer, Vendée) found in February 2001 and Brochard & Cadée (2005) reported 5 from the Netherlands : 3 found by Wim Kruiswijk at Zandvoort aan Zee in resp. 1999, 2000 and 2002 and 2 on the Island of Texel in 1995 and 1999. At that time these authors were still reluctant to see them as long distance travelers from the other side of the Atlantic Ocean. However, as far as we know black walnuts have never been reported from drift of European rivers. Up to now we know only one observation from Gorssel along the IJssel, a side arm of the Rhine in the Netherlands, where Wim J. Kuijper (pers. comm. 2013) collected one entire and one half black walnut in drift. Since 2005 Jarzembowski & Jarzembowski (2008) reported one from Sussex (UK). No other reports are published from the UK coasts, but Christophe Brochard found 4 more in 2012 in France again at Brétignolles sur Mer, (E-mail, 3rd of April, 2013).

New Dutch data

We can report now 32 (!) more black walnuts from the Dutch coast, collected mainly between 1999 and 2012. Remarkably, Wim Kruiswijk collected most of these Dutch black walnuts (28), all between 1999 and 2012 on a 8 km stretch of beach near Zandvoort where he lives. He visits this beach some 50-60 times every year, moreover he has a keen eye for drift seeds: since 1999 he collected here also 1 *Entada gigas*, 2 *Caesalpinia bonduc*, 1 *Astrocaryum* sp. and 2 *Mucuna* seeds. Black walnuts are now known all along the Dutch coast, from the province of Zeeland in the South up to the Island of Texel in the North. Probably much more must land on the Dutch coast because they can be found in such numbers on one short stretch at Zandvoort, but they are overlooked. There is no reason why they should be more abundant at Zandvoort than elsewhere on the Dutch coast. This is clearly the best studied area for drift seeds along the Dutch coast.

Some probably from North America

We now think a European source of all of these nuts is unlikely. Part of them will be real ocean drifters. The Gulfstream, flowing parallel to the US coast to the northwest bending near Cape Hatteras more to the west, will pick up the black walnuts delivered by the East-Coast rivers to the Atlantic. Those still floating will be picked up in the central Atlantic by the North Atlantic Drift (in earlier days also called the Gulfstream) and some may reach European coasts. That the largest number of black walnuts is collected from Dutch beaches can only be due to the fact that more Dutch beachcombers look for drift seeds and fruits than elsewhere in Europe. It is also possible that they are simply recognized as non-tropical drift seeds and therefore not collected elsewhere in Europe.

The large number now known from our coast makes the black walnut probably the most common transatlantic (temperate) drift seed on the Dutch coast, more common than any of the (real) tropical drift seeds. Its rarity on the UK and others coasts that receive 'Gulfstream' fruits and seeds is still puzzling. Nelson (2000) also suggested a transatlantic transport of North American seeds of the Sea pea (*Lathyrus japonicus* subsp. *maritimus*) for the occasional plants reported on the coasts of southern and western Ireland as well as for those elsewhere along the western coasts of Britain. However, for seeds and plants along the North Sea coasts he suggested a European source as did Cadée (2000; 2008) for seeds and plants along the Dutch coast.

A full record of all fruits from trees belonging to the Walnut-family (Juglandaceae) found on the Dutch coast will appear in the Dutch journal for beachcombers *Het Zeepaard* (Van der Ham et al., 2013).



Fig. 1. Two and a half *Juglans nigra* from Zandvoort (collection W. Kruiswijk) showing variability in wear. Length of nut in the middle is 28 mm. (Picture by Raymond van der Ham).

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Mangrove Propagule found on the Belgian Coast

by Koen Verschoore

Sportlaan 7, 8660 De Panne, Belgium

June 30, 2013: a propagule of a mangrove tree was cast ashore in De Panne (Belgium) amongst lots of seaweeds as *Ascophyllum nodosum*, *Fucus serratus* and *Fucus vesiculosus*. I recognized it immediately, because I knew this group of plants from regular visits to mangrove areas in different West African countries. Although I am not very familiar with the presumably 50 mangrove species, I do believe the propagule is from the *Rhizophora mangle* or red mangrove. This species is originally West African, but has also colonized the east coast of North and South America (limited to the tropical region). But how can a mangrove propagule wash ashore on a beach on the Belgian coast? As far as I have been informed, this is the first time a mangrove seedling has been found on an European beach. Although technically possible, a lift on the Gulf Stream current is doubtful, because so far no records from Ireland, Scotland and Norway have been found (pers. comm. G. C. Cadée). Unlike other drift seeds, such as seabean, nickernut and seaheart, mangrove propagules are not 'attractive.' They are certainly not imported for decorative reasons, unlike the drift seeds mentioned above. A more plausible explanation is the increasing success of specialized aquaria or vivaria with species of fish that prefer mangrove, such as mudskippers and archerfish (*Toxotes*). I learned from the past that dried stilts of mangrove trees were used as decoration and habitat in such aquaria. It only took me about twenty minutes of surfing on the internet to find websites in the US, the UK, the Netherlands and Austria, where *Rhizophora mangle* propagules can be ordered to grow in a vivarium. The species can endure a broad range of salinity and temperature fluctuations and is very easy to grow. I assume the mangrove propagule is a local species, which somehow got lost or 'escaped.' Unless, of course, proof is provided to the contrary.



Drift Seeds on Cornish Strandlines

by Paul A. Gainey

The north coast of Cornwall with its long, west facing, sandy beaches is approximately 4300 miles from Miami, Florida, as the crow flies and somewhat longer as the sea bean floats.

Ever since Dame Catherine Killigrew of Falmouth, just a few miles from my home town of Penryn, discovered the fascination of sea beans in about 1570 AD there have been a small band of beachcombers that have continued to seek out these fascinating objects on our Cornish shores. The purpose of this short communication is to report on the occurrence of some of the rarer disseminules to reach our Cornish coast, mainly the north coast, over the past ten years or so. The west facing beaches of the north coast i.e. Sennen Cove, Gwithian, Perranporth, Watergate Bay, Porthcothan, Treyarnon, Constantine Bay, Widemouth, Bude and others, are ideally situated to receive these 'visitors'. The number of sea –beans found stranded varies from year to year and in certain years they can be relatively frequent. Thus from February 26th to May 8th, 1999, a total of 71 days, Nick and Jane Darke collected no less than 240 disseminules comprising; 81 Ipomoea/Operculina spp., 51 Hamburger/Horse Eyes- *Mucuna urens* and *M. sloanei*, 42 Sea Peas – *Lathyrus japonicus*, 38 Sea Hearts – *Entada gigas*, 12 Sea Purses – *Dioclea reflexa*, 10 Grey Nickernuts- *Caesalpinia bonduc*, 2 Starnut Palms – *Astrocaryum* spp., 1 Brown Nickernut – *Caesalpinia major*, 1 Bay Bean – *Canavalia rosea*, 1 Coconut – *Cocos nucifera*, 1 Sea Coconut – *Manicaria saccifera*, 2 Wood – Rose, *Merremia tuberosa* and 1 Mary's Bean – *Merremia discoidesperma*.

Sea Pea - *Lathyrus japonicus* subsp. *maritimus*

Grey Nickernut - *Caesalpinia bonduc*, Grey and Red Hamburger Beans - *Mucuna sloanei* and *M. urens* respectively, and various members of the Convolvulaceae such as Railroad Vine, *Ipomoea pes-caprae*, Moonflower, *Ipomoea alba* and *Operculina* spp. are by far the most commonly found, together with smaller numbers of Sea Heart *Entada gigas*. Sea Purse *Dioclea reflexa* remains distinctly scarce, however, in 1999 no less than twelve specimens were washed ashore. Many of these species are still viable and germinate readily and are capable of growing to maturity out of doors or under glass.

Rarer disseminules include the following species;

i) Prickly palm endocarps and small *Acrocomia* spp.

Seemingly this is a very uncommon stranding in the British Isles and Ireland with only one previous record by William MacGillivray from the Outer Hebrides around 1900 AD. Three specimens, all from Perranporth beach, and amazingly all from the same stretch of beach were found over a distance of approximately 300 metres in May 2001, February 2007 and 2008.

ii) Box Fruit - *Barringtonia asiatica*

A well-worn specimen was found virtually devoid of its outer seed coat and exhibiting fully its very fibrous interior. The specimen, approximately 7.5 cm square at its base, was discovered on Crantock Beach near Newquay by the author in 2012. Very uncommon, this specimen represents the first record for Cornwall and only the second for the British Isles and Ireland.

iii) Starnut Palm - *Astrocaryum* spp.

William MacGillivray's undated specimen on Barra in the Outer Hebrides was the only British specimen known until the 1990s when starnut endocarps were collected from Godrevy, Cornwall, and the Outer Hebrides. At least 5 endocarps have been found on the north Cornish strand line in the last



10 years. Judging by the size and shape of the endocarps several species would seem to be involved.

iv) Brown Nickernut - *Caesalpinia major*

This is very much rarer than the Grey Nickarnut, *C. bonduc*, but 3 specimens have been found within the last 10 years, two at Perranporth and one on Gwithian beach.

v) Antidote Vine - *Fevillea cordifolia*

A specimen of this new species to British and European shores floated to the feet of the author on Perranporth beach in 2003. Very nearby was a Coconut, *Cocos nucifera*, endocarp festooned with goose barnacles and holed by many small boring marine creatures.



vi) Soapberry - *Sapindus saponaria*

One specimen was found on Perranporth beach by Chris Eason in March/April 2012.

Although they can reach the Azores they were thought to be incapable of remaining afloat long enough to reach Britain and Europe.

William MacGillivray found a specimen on Barra, Outer Hebrides in February 1903 and his record, together with this Cornish record, would suggest that, given favourable conditions, this small, black, spherical seed is capable of reaching European shores.

vii) Necklace Pod - *Sophora tomentosa*

This small seed, together with those of the various *Ipomoea* and *Operculina* spp. Are easily overlooked. A specimen of this very rare seed was collected by Jane Darke on Treyarnon beach in November 2010 and represents a new species for European coasts.

viii) Mary's Bean - *Merremia discoidesperma*

A very rare disseminule on Irish and British shores with 4 specimens, two from Constantine Bay and one each from Perranporth and Gwithian over the past 10 years.



ix) Wood-rose - *Merremia tuberosa*

Three specimens, two certain and one less certain, have been found on the north Cornish beaches. Two specimens were found by Nick and Jane Darke between February and April 1999. The third specimen was found by the author on Perranporth beach during March 2000.

x) Tropical Almond - *Terminalia catappa*

The corky mesocarps, which can float for up to 2 years, have been reported from the Netherlands and the Isles of Scilly. Whereas the specimen from the Isles of Scilly was well worn the specimen found by Chris Eason on Perranporth Beach during 2012 was in good condition and may indicate a rather rapid transatlantic journey under favourable conditions. Two further specimens were found by Jane Darke at Treyarnon on January 2009 and again on March 2013.

xi) Water Hickory - *Carya aquatica*

Several specimens were collected by Alma Hathway on Crantock Beach near Newquay. Previous to this the only other European specimen is the one collected by John Dennis on the Isles of Scilly in 1981 and an unconfirmed report of one from the coast of Connemara in the west of Ireland.

xii) Coconut - *Cocos nucifera*

There have been numerous records of the coconut, with or without their husk, being stranded on our Cornish shores. Many, if not most of these, are not true long distance drifters. However, the specimen festooned with goose barnacles and extensively bored by marine organisms that came ashore together with a specimen of Antidote Vine seed at Perranporth in 2003 was probably the genuine article.

xiii) Coral Bean - *Erythrina* spp.

This is an uncommon species with recent collections from Porthcothan and Gwithian beaches. The specimen found at the latter location was found in a dampish area and had started to germinate.

xiv) Sea Coconut - *Manicaria saccifera*

Always a rare species on British shores, several examples were gathered in Britain from widely separate localities in Cornwall and the Shetland Isles within a short period during the early 1990s. Two or three specimens have been collected from Cornish shores over the past decade.

xv) Hamburger Bean - *Mucuna holtonii* ?

A single specimen of a glossy black sea bean closely approximating to this species was found by Jane Darke at Porthcothan in 2008. Ed Perry comments 'close to *M.holtonii* but not quite.' Specimens of this species collected by Ed have a more pebbled surface and are not so shiny and smooth. There appears to be bite marks on the surface of the bean and Ed wonders if it has been ingested, attacked by digestive juices and finally egested by another organism and that this process has possibly attenuated the surface texture.

xvi) Bay Bean - *Canavalia rosea*

This is an infrequent find and reported only from Shetland and Cornwall. Strangely it is not known from Irish beaches. Seven recent records date from 2000-2007 from Perranporth, Porthtowan, Gwithian and Holywell beaches.

xvii) Nutmeg - *Myristica fragrans*

Recently, in July 2013, Chris Eason collected a specimen of this species from Perranporth beach. The actual nutmeg could be clearly heard rattling around inside the thin hard shell. Previously Jane Darke had collected a specimen with a broken outer shell at Porthcothan in 2008. William MacGillivray's collection contained three specimens, two collected in 1900, and one sometime after 1908. Another specimen was found on a Dutch North Sea beach in September 2004. Charles Nelson states "it is very unlikely that nutmeg is true long distance drift seed". The fact, however, that they have been found on the strand line at Cape Hatteras and have been



demonstrated to have a flotation time of 6 months to 4.5 years would seem to open up the possibility that at least some nutmeg seeds are capable of crossing the Atlantic to our Cornish coast.

xviii) Pecan - *Carya illinoensis*

A very uncommon stranding with three old (pre-1930) records from Wales (Carmarthen), Cornwall and Scotland (Outer Hebrides). The endocarp found by Nick and Jane Darke on Perranporth beach in March 2002 would seem to be the only relatively modern European record.

Together with these rare, and not so rare disseminules, numerous other artifacts strand on our Cornish shores, many originating from the eastern seaboard of Central and North America; lobster and crab pot tags and escape hatches, Scotty's bait boxes, plastic octopus pots, pumice stone, shotgun cartridges, night lights, fishermen's marker buoys, string water filter cartridges, corky thorns of the Kapok tree and even high power boats used for people and drug smuggling, to name but a few. Marine life, probably more familiar to the more tropical areas of the eastern sea board of the Americas also occurs, especially after prolonged periods of south westerly and/or westerly winds, animals such as; By-the-wind-sailor, *Veleva veleva*, Portuguese man-o-war, *Physalia physalis*, Purple Sea-snail, *Janthina janthina*, and the even rarer *J. pallida* and *J. exigua*, and Rams Horn Squid *Spirula spirula* endoskeletons.



Three of the four species of turtle that nest on the beaches of Virginia to Texas i.e. the Leatherback *Dermochelys coriacea*, Loggerhead *Caretta caretta* and the Kemp's Ridley *Lepidochelys kempii*, also occur, sometimes in surprising numbers. They probably come to us as a result of chasing jellyfish and other food in the relatively warm waters of the Gulf Stream/North Atlantic Drift.

Pieces of wood need to be examined carefully, as do floats, ropes, boxes, etc. festooned with goose barnacles, as often hidden amongst them, is the Columbus Crab *Planes minutus*. This crab is also, not too infrequently, found underneath the tail of stranded turtles.

Algae also are able to make the transatlantic journey. During 2011/2012, vast quantities of Egg wrack *Ascophyllum nodosum* together with attached epiflora and epifauna, which may have come from the algal cutting activities off the coast of Nova Scotia and Maine, were cast onto our beaches. The more tropical *Sargassum* weeds *Sargassum natans* and *S. muticans* are also occasionally to be found.

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Drifted Scalloped Squash and Coconut Destruction

by Roger A. Hewitt,

12 Fairfield Road, Eastwood, Leigh-on-Sea, Essex Great Britain SS9 5SB

During 2012, I continued my strandline walks at Southend-on-Sea and made measurements in metres rather than km in the westerly direction to show how close some coconuts were to each other (Table 1). This year, after walk 85 on April 5th (Hewitt 2012), I measured them *insitu* and then left them to confirm their short resident times in this unpunctured state. Dry or punctured coconuts and those stranded with other offerings in bags are not listed on Table 1. The Ganesha Festival on East Beach involved the release of a raft bearing probably coconuts, as well as the coconut husk fibres and Ganesha image seen at +918 m for some weeks. This festival coincided with easterly winds of former tropical storm Nadine on September 23, which kept most people off East Beach. The raft evidently moved from the slipway at -380 m to the South-West, presumably releasing three of the coconuts listed on Table 1 on the way. Only two more were seen intact on East Beach. But each year, many Hindu rituals took place at various other sites along my route and these could have released coconuts.

Analysis of Table 1 in terms of Hindu festival dates suggests that many wet stranded coconuts had a local recent source, like some omitted dry standings and observations of fleets of coconuts moving east near Southend Pier on Ananta – Chaturdashi (September 29, 2012) and the Barge Pier (1902, 1750, 1750, 1424, 1354 m W. of East Beach pool after N.E. gale) on January 15, 2013 after Makar Sankranti. A similarly floating, but soon wrecked coconut, moving east at 1898 m and a dry one stranded around 5250 m on February 15, 2013, exactly match the date of the Saraswati puja that year. Other matches are reported on Table 1. Survey 117 was on Raksha-Bandha; survey 121, on Janmashtami; and survey 124, on the fourth day of the leap month Adhik evidently having characteristics of the repeated month containing the start of the Ganesha Festival represented by survey 136 (Bhadrap'd 5, red painted spots on coconut). Survey 137 was following the main festival at Shoebury; survey 156, the day after Diwali; survey 157, a major Sikh festival and the day before the end of Hindu 'lent'; and survey 193, the day after Shivaratri. Survey 203 was on Good Friday - two days after Holi. But finds such as the opened husk U4 with epicarp (survey 175) probably had been at sea for some days like 300+ East Beach March 25-26 cuttlebone strandings. The low probability of coconuts reaching Southend from London via the Thames during more favourable westerly winds was illuminated by observations on the coconut first seen during survey 163 and probably originating from the site at +2074 m where many festival artifacts occur. This coconut was not seen again until survey 166 (Jan. 3rd), when it was apparently unmoved and deduced to have been buried rather than moved by some higher stormy tides. Then on survey 167 it had moved east to strand low on the sands near the eastern edge of the Barge Pier situated at 1546 m. From here there was a further obstacle, termed Gog's Berth to be passed at 1509 m, before it could strand on East Beach or reach the North Sea. But the same coconut was found coming in at the site reported on Table 1 (survey 168), protected from the gentle westerly wind by the Barge Pier and seawall. It came in more slowly against the wind on a northerly course than the algal strandline. The conical husk-cone never pointed downwind when measured at high tide over a half-hour period and the average stranded orientation from 22 measurements (Table 1) pointed almost exactly into the wind measured from a flag. Then before a final measurement could be made, a larger pair of waves arrived as the tide turned, either from a ship passing out in the mist, or as a natural phenomenon in estuaries producing a "bore" when they narrow. The whole situation was changed as the coconut was refloated by the highest wave seen so far, moved towards the pier and the seawall there, and then south in a rip current beside the pier into the ebb current which presumably had stranded it low on the beach the previous day and again in the night. This time, however, the tide was high enough for an additional current to move it at four knots over the lower parts of Gog's Berth and into the open North Sea. But this situation did not persist, even with the assistance of a westerly wind, the coconut soon moved north nearly to the seawall at the actual Shoebury Ness and then was last seen moving along the coast to the North-

East at 1410 m there. It is evident that either because of the movement of ships at high tide, or because of a natural tendency for waves to develop as the tide turns (seen at Rochford where no ships moved), coconuts will be moved down the Thames Estuary with a westerly wind when stranded. However, there is a risk of them breaking against piers and sea defenses when refloated and returning in shore twice a day. This particular coconut took two weeks to move less than 2 km and was exceptional in being seen intact for so long at Southend.

The main reason for this short residence time of unpunctured coconuts is breakage and collection by other people; often before I could record them. Some rituals involved puncturing one eye to presumably release the milk (these endocarps did not stray from sites at 9.6 to 9.8 km). or splitting in half beside Ganesha images with *Ocymum sanctum* leaves (at 6.6 km during *Ananta chaturdashi* September 29). Under more natural circumstances transverse cracks developed in the top of the endocarp as it sinks into a pit which it makes in swash zone sands during successive tides of similar height. The endocarp then easily breaks when a higher tide refloats it and moves it on to sea defences. When split in these various ways, the endosperm is reduced to a thin white skin on the dark testa layer in one month. In the spring, there is barnacle settlement on the testa as well as both sides of the brown endocarp in lower beach or mudflat environments. Typical *Elminius modestus* Darwin of 0.5 to 1.0 mm length were on the endocarp and testa fractured against the seawall. Some of them grew on the cracked edge. All died when it was thrown right over the concrete to be found on June 15, 2011 at +0.85 after a storm.

Table 1. Coconut strandings and restrandings at Southend in an unpunctured state recorded during numbered surveys (S) of the beach from April 12, 2012 (S=86) to April 16, 2013 (S=210). Coconuts measurements as in Hewitt (2012). Most coconuts were never seen intact again; but a few appeared more than once in the list. They showed evidence of predictably downwind movement eastwards towards the North Sea, plus burial in swash zones.

S	To W. m	Line m	Lat. m	Line trend	Wind from	Base to	Tide m/d	B N	A mm	T mm
87	3019	12.8	-0.4	307°	275°	307°	4/21	4	-*	-
90	2048	12.1	-1.1	295°	184°	68°	5/8	4	417*	354
90	2060	12.1	-1.1	291°	184°	25°	5/8	4	512*	386
94	2004	13.8	-0.8	292°	240°	114°	6/9	5	481*	354
102	5137	8.3	-8.8	269°	89°	31°	6/28	3	447*	373
108	2045	7.1	-0.4	282°	237°	336°	7/12	4	392*	310
109	1846	7.4	-1.0	301°	238°	241°	7/16	5	329	297
111	2076	11.8	-1.0	318°	250°	133°	7/19	4	335	322

117	9066	12.6	-0.8	306°	S.W.	110°	8/2	4	329	318
117	8616	14.0	-0.3	266°	215°	215°	8/2	4	“	“
-	8616	16.5	-0.5	294°	S.	307°	8/4	4	“	“
121	-102	3.4	+1.7	215°	E.	135°	8/11	3	341*	316
124	2077	14.0	-1.2	315°	W.	75°	8/21	3	345	290
134	1999	15.9	-0.2	303°	252°	269°	9/17	4	371	367
136	3226	12.1	+0.5	300°	S.W.	248°	9/21	4	302	278
137	257	6.5	+3.4	231°	E.	130°	9/25	6	468*	342
138	256	9.5	-0.9	231°	318°	224°	9/27	4	“	“
137	257	6.5	+3.0	231°	E.	202°	9/25	6	455*	297
138	256	9.5	-0.7	231°	318°	11°	9/27	4	“	“
139	253	12.9	-2.1	231°	304°	21°	9/29	3	“	“
137	674	6.5	-1.3	245°	205°	20°	9/25	5	392*	316
140	2707	14.4	-2.1	274°	224°	300°	10/2	6	322	297
140	4037	14.4	-3.7	285°	224°	289°	10/2	6	341	316
141	3035	12.3	-8.8	295°	S.W.	156°	10/3	5	“	“
152	2069	14.1	-0.1	304°	242°	171°	11/2	5	373*	295
156	2430	15.6	-1.9	128°	130°	102°	11/16	3	398*	292
156	2839	15.6	-0.4	113°	130°	88°	11/16	3	436*	285
157	2785	6.5	-2.2	298°	S.	44°	11/23	5	348	310
157	3716	6.5	-3.4	248°	S.	48°	11/23	5	342	320

161	8030	14.0	+1.2	291°	S.	116°	12/19	5	367*	304
163	2000	13.3	+0.5	292°	210°	130°	12/29	9	379*	291
167	1539	13.0	-4.9	281°	345°	325°	1/10	4	“	“
168	1541	13.7	-0.3	281°	318°	323°	1/11	3	“	“
175	1519	16.8	+0.6	242°	S.W.	250°	1/30	9	405*	322*
193	-572	19.0	-0.9	230°	40°	262°	3/11	8	379*	316
198	-274	5.2	-2.4	230°	95°	345°	3/22	6	405*	337
203	-556	17.8	-8.4	228°	70°	170°	3/29	4	341	297

Figure 1. Larger *Elminius* barnacles and green algae grown on an endocarp concavity before the dark testa layer had fully exfoliated and after breakage (cm scale). From strandline of October 19, 2011 at 0.85 km.

A scalloped squash was collected from the rising high tide at 8241 m during October 16. It contained three Fulmar beak marks on the more convex, upper white surface around the green pentagonal base of the stem. These birds are not seen from the coast at Southend and showed that the mushroom had not come from the adjacent Westcliff restaurants. The specimen looked rather like a sunflower, due to the orange interior being exposed by wear of the skin on the less convex, evidently denser, water saturated surface. It also resembled a flying saucer, or discus with ten lobes around the equator. Measured from poles, defined by the middle of the stem to a pit bearing mm-scale infolded lobes in the middle of a greyish orange pink pentagonal plate, the equatorial radii varied between 75 and 83 mm. When collected and kept dry indoors at 13°, it continued to feel cold due to the seawater trapped inside for over a week and developed some soft grey fungal spheres on the most damaged part of the equator in that time. After two weeks white hyphae developed on this damaged and subsequently contracted edge. An interesting question is whether the dried and sea-water soaked spores of fungi remain viable after drifting. Thanks to Ed Perry for identifying the collected item in Figure 2 as a scalloped squash.



Figure 2. Scalloped Squash (variety “White Scallop”) with an assortment of shells.

Reference

Hewitt, R.A. (2012) Southend *Nypa Sepia*, fruit and Cocos January 2011-April 2012 *The Drifting Seed*, 18, p.11-17.

Sea Beans and Ivory Nuts
by Ed & Bidy Jarzembowski
Seaford Museum

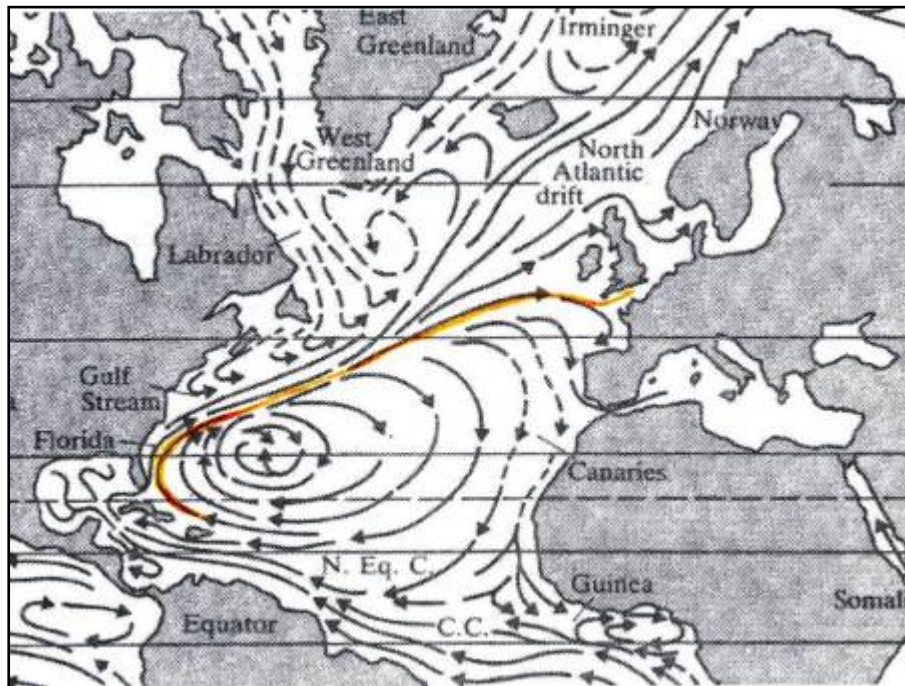


Figure 1. Drift Seed route in orange.

Sea beans and other drift seeds

Drift seeds are the seeds and fruits (containing seeds) that are carried out to sea, often down streams and rivers. They may join the local flotsam or drift on ocean currents before being eventually washed ashore. Some seeds can float for months and years covering thousands of miles; if climate change continues, currently exotic species may establish here. Floating seeds are called 'corkies' or 'shinies.' Corkies, e.g. Coconuts, float because they trap air in a fibrous outer husk. Shinies, e.g. Sea Hearts, have a tough outer coat with air cavities inside.

Drift seeds can be occasionally found by looking along the tide line on local beaches, especially after south-westerly storms, mixed up with seaweeds, bits of shipwreck, and other items (p. 4). They include true drift seeds or sea beans which cross oceans such as Hamburger Beans (*Mucuna*) and Sea Hearts (*Entada*). More local seeds include pine cones (*Pinus*) and hazel nuts (*Corylus*) plus discards by people, e.g. peach and apricot stones (*Prunus*), or losses from shipwrecks, e.g. Ivory Nuts (*Phytelphas*). Some seeds are more difficult to assess, e.g. coconuts (*Cocos*) can be true drifters, discards or losses.

Message from America

Seeds are the main dispersal agents for plants and drift seeds can reach remote islands; Sea Pea has spread around the British Isles by drifting. Drift seeds told Spain's Christopher Columbus that there was land across the ocean before his historic voyage across the Atlantic. Charles Darwin set up experiments at Down House after his celebrated South American expedition to test seed flotation, but didn't know that drift seeds from Central and North America could be found on the coast near Seaford Museum. They have drifted mainly on the Gulf Stream (Picture 2 [about here]), which is also responsible for our relatively mild climate, and include the following tropical species: Sea Heart (*Entada gigas*), Brown Hamburger Bean (*Mucuna sloanei*), Grey Nickernut (*Caesalpinia bonduc*), Starnut (*Astrocaryum* species), and Sea Purse (*Dioclea reflexa*). They also include the temperate Black Walnut (*Juglans nigra*) from North America. The pods of the Royal Poinciana (*Delonix regia*)

have also turned up in Seaford Bay (Tide Mills). There are many more drift seeds that have not yet been recorded here. Maybe you will find one.

Sea Heart

Large, dark brown, heart-shaped sea bean; may be found on all our local beaches. It's the seed of a tropical vine which climbs up trees in the rain forests of Costa Rica where it is known as the 'monkey ladder.' These tough seeds can float in sea water for over a decade, so they are our most common drift seed. Sea hearts were carried by sailors as good-luck charms and are still used in jewelry.



Photo 1. Sea Heart (Sussex)



Photo 2. Sea Hearts and pod (America)

Brown Hamburger Bean

So-called because this medium-size, round sea bean has two halves separated by different coloured layers resembling a hamburger; found at Cuckmere Haven (Pic. 19). It's another brown seed of a tropical climbing vine and is also commonly called 'horse-eye' because it resembles a horse's (or bull's) eye.



Photo 3. Brown Hamburger bean (Sussex)
twenty pence piece for scale (diameter 22 mm)



Photo 4. Brown Hamburger beans in pod (America)



Photo 5. Brown Hamburger bean flowers (America)

Sea Purse

Yet another brownish seed of a tropical climbing vine or liana from Cuckmere Haven; so-called because of its resemblance to a traditional small purse.



Photo 6. Sea Purse (Sussex)

Grey Nickernut

Also spelled Gray Nickarnut and referred to as the Sea Pearl, this medium-size, oval seed can come in colors other than pale grey, but has distinctive hair-line cracks in the seed coat; Cuckmere Haven. It's produced by a prickly shrub growing to two-meters (six-foot) high in Central America, and 'nickar' means marble as in children's games.



Photo 7. Grey Nickernut (Sussex)



Photo 8. Grey Nickernuts on bush (America)

Starnut

A black nut shaped like a Tulip bulb but with three pores in its base, like a tiny Coconut; Cuckmere Haven. It comes from the Starnut Palm which grows in Central America where the nuts may be harvested for oil.



Photo 9. Starnut, two views (Sussex)

Royal Poinciana

The large brown pods of this tree can float for several months in sea water—unlike the seeds! This tropical legume is native to Madagascar, growing up to ten meters (thirty-three feet) high. Also called the Flamboyant or Flame of the Forest, it's now widely planted as a tropical ornamental tree including America.



Photo 10. Royal Poinciana Tree in bloom (America)



Photo 11. Royal Poinciana pod (Sussex)

Black Walnut

Thicker and rounder than the English Walnut, this nut is from a temperate tree native to eastern North America, but occasionally crosses the Atlantic Ocean to Seaford Bay.



Photo 12. Black Walnut (Sussex)

Ivory Nut

The nut of a Central American palm grown in Ecuador for vegetable ivory; Tide Mills, Seaford, Cuckmere Haven. It did not float here but can still be found as bird-pecked flotsam from the cargo of the *Peruvian*, a sailing ship wrecked on the shore near the Museum in 1899 (Pic. 18). Thousands of nuts were released into Seaford Bay and freshly collected ones were decorated and sold as souvenirs by local artists (Pic. 23).



Photo 13. Ivory Nut Palm (Ecuador)



Photo 14. Ivory Nuts (Sussex)



Photo 15. Ivory Nut with sketch of the *Peruvian*



Photo 16. Figurehead from the *Peruvian*

Where to look for drift seeds

Sea beans and other seeds have been found on all the main Seahaven beaches (Seaford, Newhaven, including Tide Mills, Cuckmere Haven) and beyond (Birlinging Gap). You will need to make a number of visits- best after sustained westerly gales- to build up a collection. Look where lighter and smaller flotsam has been deposited at the top of the beach. Please report any new finds to Seaford Museum.



Photo 17. The Cove, Seaford, with ruins of Victorian sewer outfall in foreground and Splash Point beyond.



Photo 18. West Beach, Newhaven, from Castle Hill



Photo 19. View from Seaford Head Nature Reserve looking east towards the Seven Sisters with Cuckmere Haven in the foreground and Birling Gap in the distance.

Oldest drift seed

Fossil pollen of the Nypa Palm has been found in fifty-six million-year-old deposits in Newhaven. Today, the drift seed of the Nypa Palm, a tropical fruit, may be found washed up in S.E. Asia and even America.



Photo 20. Western end of Seaford Bay looking from Tide Mills towards Newhaven

Other common finds on the beach

Sea life including seaweeds, shells, and mermaids' purses (egg cases of rays).

Drift wood including timber from shipwrecks and wooden artifacts.

Bones including fish, birds and mammals, some cut up for food.

Fossils, rocks and minerals from marine erosion, longshore drift, beach replenishment and even ship's ballast and coastal trade (coal).

Metal including iron, brass, copper, lead and aluminum artifacts from sea, air and land transport, military activity, and fishing.

Organic artifacts of leather, rubber and plastic, including old shoes and bottle tops plus fishing gear.

A complete list is very long: the tides and weather make the shore endlessly fascinating but be careful as you go...

Some further reading

The following book on drift seeds found in Britain and north-west Europe has been recently reprinted: Nelson, E. C. 2000. *Sea Beans and Nickar Nuts*. BSBI Handbook 10, 156 pages, London (ISBN 0-901158-29-1)

More recent articles including on East Sussex can be found in *The Drifting Seed*, an on-line newsletter dedicated to drift seeds around the world, at: www.seabean.com

Picture credits

Ed Jarzembowski: Photos 1, 3, 6, 7, 9, 11, 12, 14, 15, 16, 17, 18, 19, 20

Gerhard Cadée: Figure 1 (modified)

Ed Perry: Photos 2, 4, 5, 8

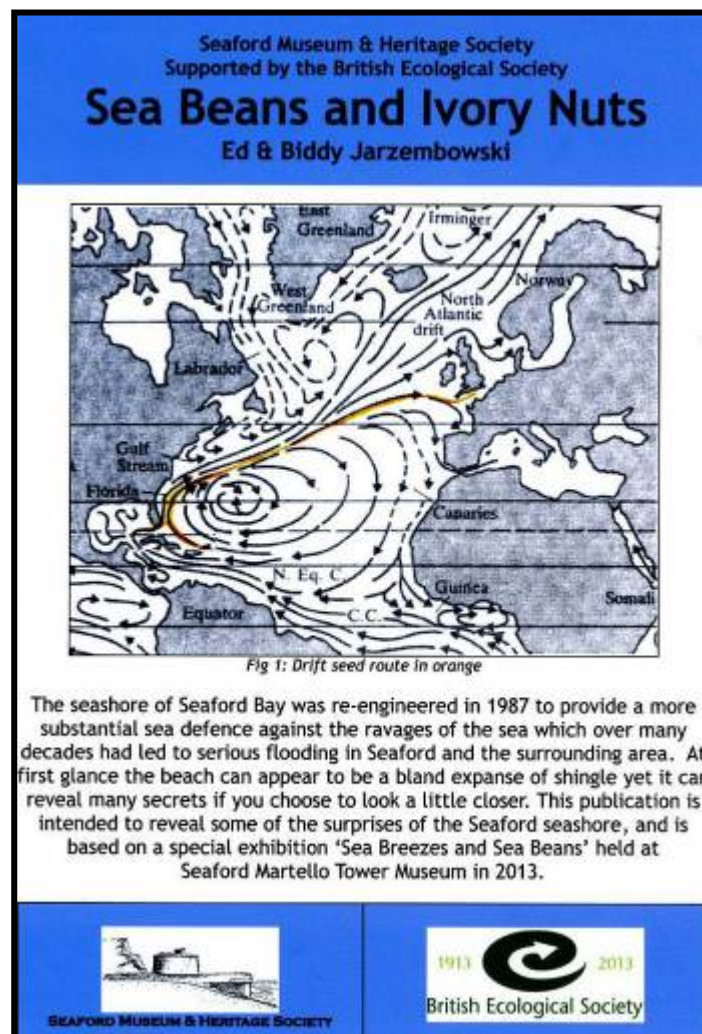
MGonline.com, TropicalPlantsLibrary.com: Photo 10

Barbara Pilcher: Photo 13

Thanks also to Fred Clouter and Richard Pinder for help with imaging.

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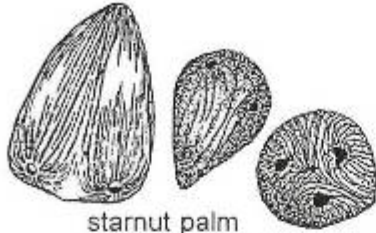
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Simple Guide to Common Drift Seeds
 (Illustrations by Cathie Katz and Pamela J. Paradine)



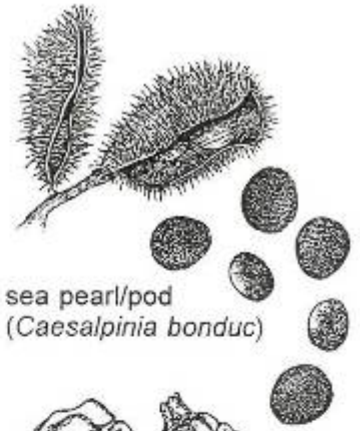
hamburger bean
 (*Mucuna* spp.)



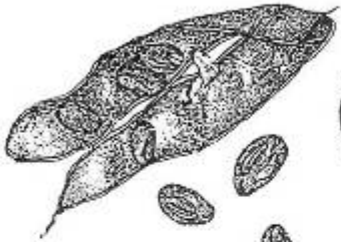
starnut palm
 (*Astrocaryum* spp.)



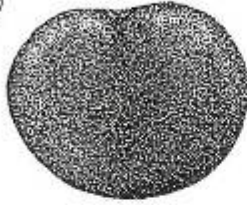
country almond
 (*Terminalia catappa*)



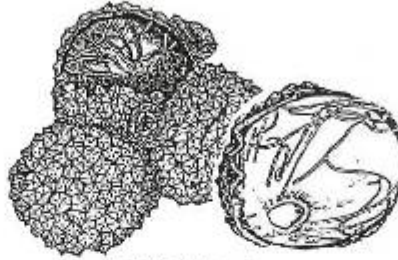
sea pearl/pod
 (*Caesalpinia bonduc*)



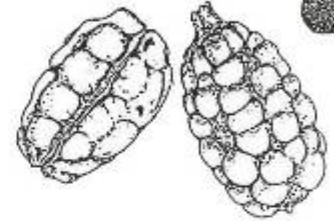
bay bean/pod
 (*Canavalia rosea*)



sea heart
 (*Entada gigas*)



golfball/pod
 (*Manicaria saccifera*)



hand grenade
 (*Sacoglottis amazonica*)



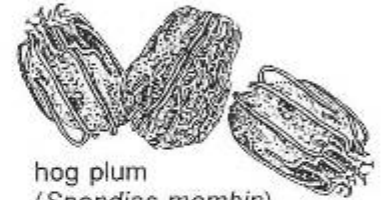
Mary's bean
 (*Merremia discoidesperma*)



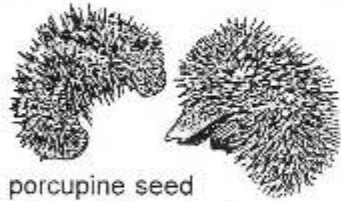
coin plant
 (*Dalbergia* spp.)



sea purse
 (*Dioclea reflexa*)



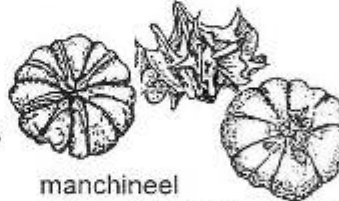
hog plum
 (*Spondias mombin*)



porcupine seed
 (*Caryocar microcarpum*)



LEGO® toys
 (*plasticus legoii*)



manchineel
 (*Hippomane mancinella*)



white/black/red mangrove
 (various genera)



The Drifting Seed

PO Box 510366
 Melbourne Beach, FL 32951

