

- Hawaii, California, Bering Strait
- Bounty-hunting
- Pandora's Box
- *Artocarpus altilis* (Moraceae)
- Molecular systematics

William Bligh



-James Cook's sailing master
(3rd Voyage; 1776)

-Captain, HMS *Bounty*
(1787-1789)

The Mutiny on the *HMS Bounty*, 1789



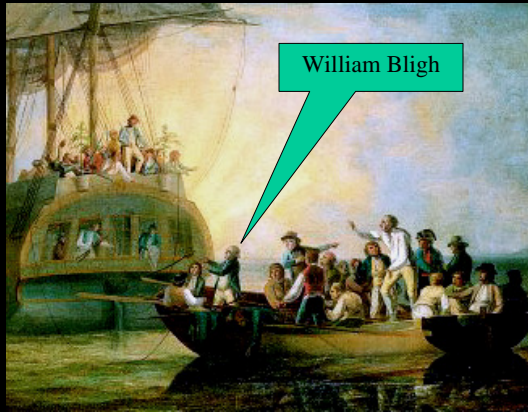
Portrait by Allan Ramsay, 1762

George III



William Bligh

The Mutiny on the *Bounty*, 1789



William Bligh

-Bligh setting out (ultimately) for Timor and the Malay Archipelago. (3618 nautical mile; 6701 km)

The Mutiny on the *Bounty*, 1789

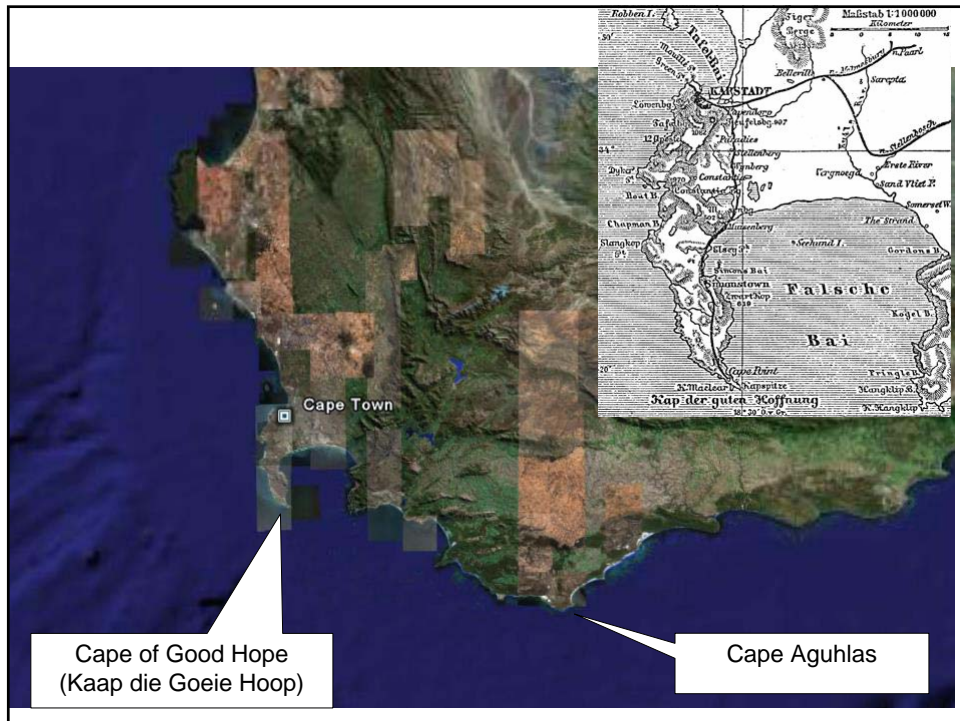
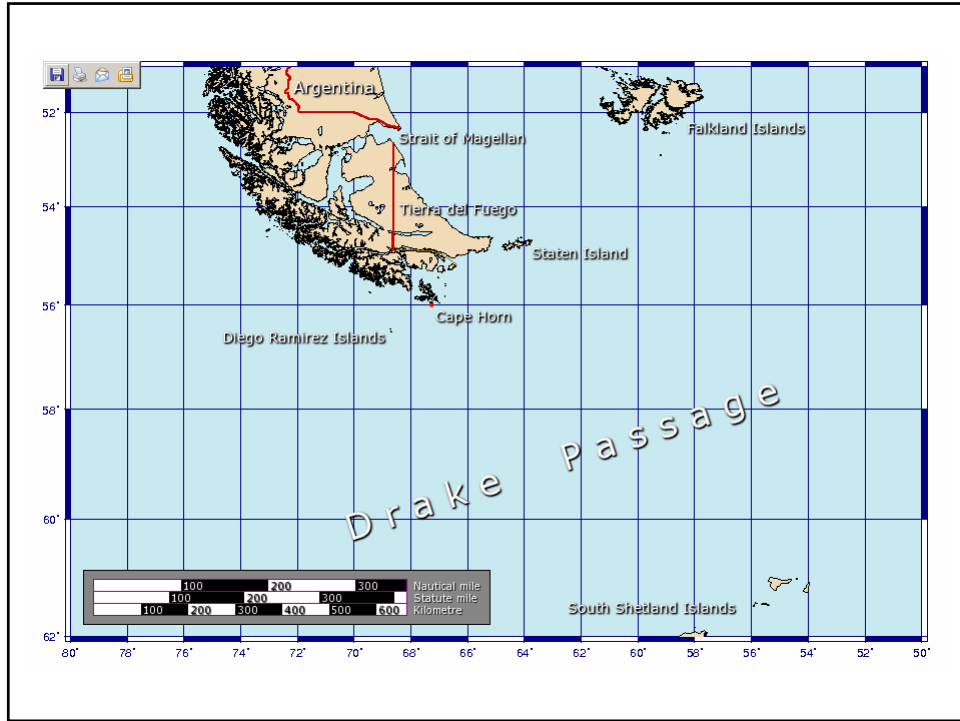


The voyage of the HMS *Bounty*, 1777-1789



-23 Dec 1787, departed for Tahiti

Mission: To collect **breadfruit** for West Indies.





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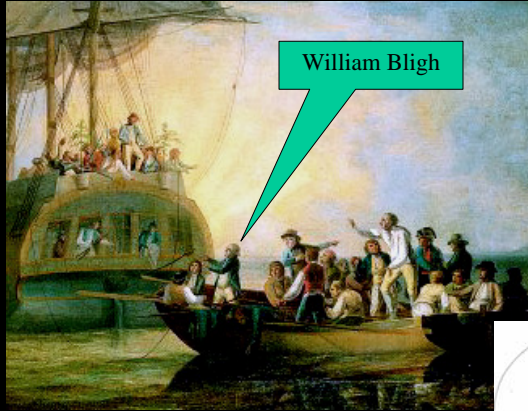
-28 Oct 1788, reached Tahiti

5 mos. Collecting & preparing 1000+ breadfruit trees.

-4 Apr 1789; set sail for West Indies

-29 Apr 1789, **mutiny**.
Led by first mate Fletcher Christian

After the mutiny, 1789



-Bligh setting out (ultimately) for Timor and the Malay Archipelago. (3618 nautical mile; 6701 km)



After the mutiny, 1789



Pandora by John William Waterhouse, 1896

HMS Pandora

-14 mutineers caught, held in "Pandora's Box"

-Return: Great Barrier Reef, 4 prisoners and 31 crew lost.

The voyage of the HMS Bounty, 1777-1789



Why the mutiny?

Introduction to the genus *Artocarpus* (Moraceae)



Champedak *A. integer*



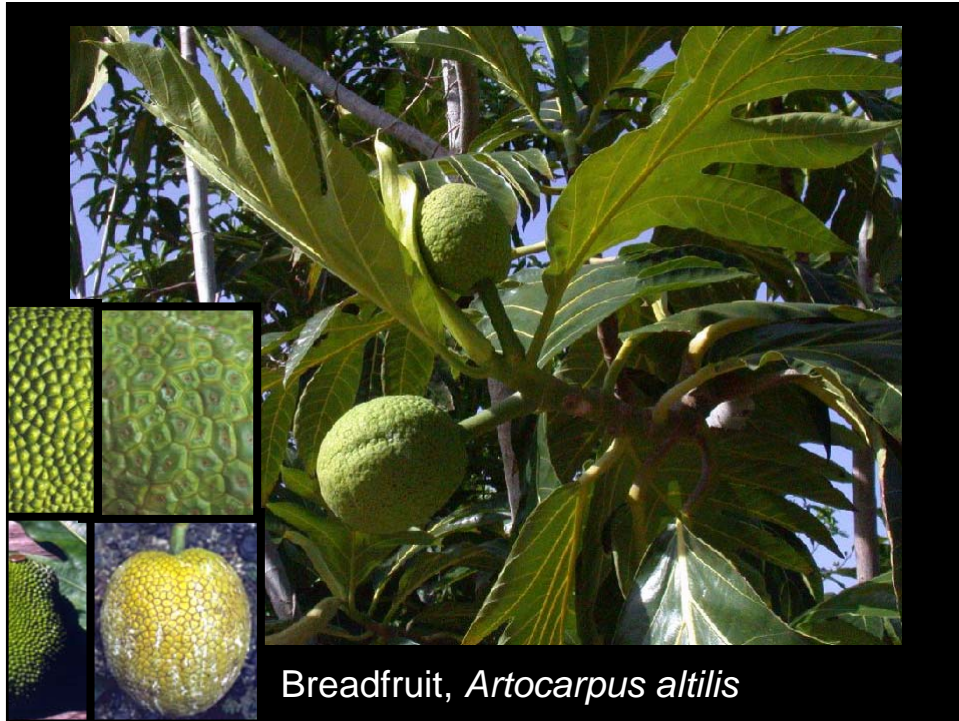
A. odoratissimus



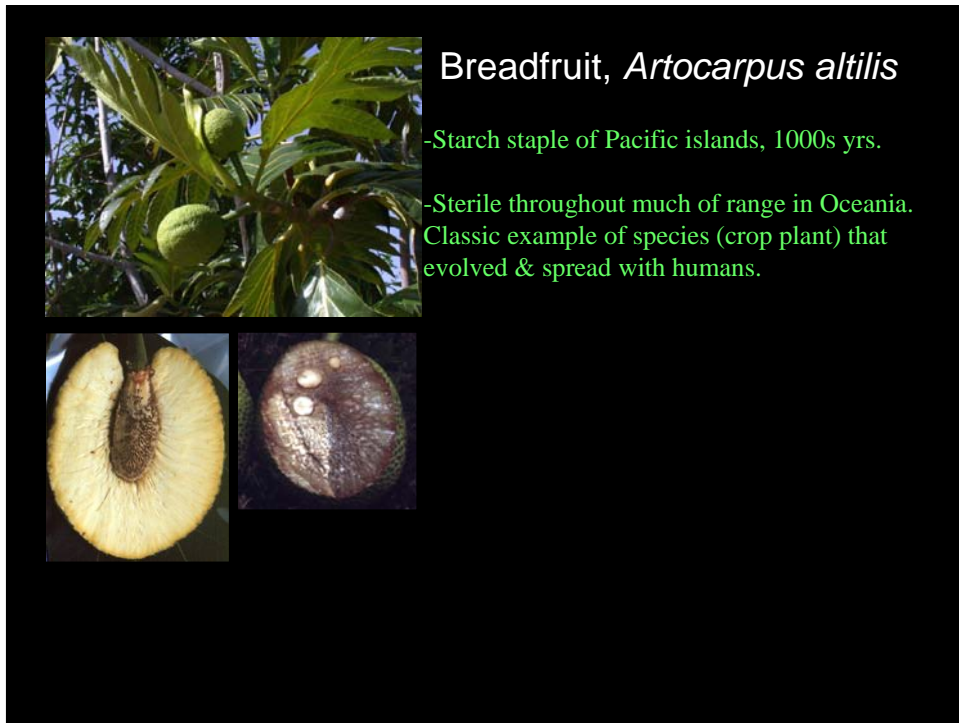
Artocarpus heterophyllus
Moraceae
© G. D. Carr



Jackfruit, *A. heterophyllus*



Breadfruit, *Artocarpus altilis*



Breadfruit, *Artocarpus altilis*

- Starch staple of Pacific islands, 1000s yrs.
- Sterile throughout much of range in Oceania. Classic example of species (crop plant) that evolved & spread with humans.

Breadfruit, *Artocarpus altilis*



Breadfruit, *Artocarpus altilis*



- Why & how have sterile varieties persisted?
- Is there a connection between human & breadfruit dispersal?
- Are studies of breadfruit origins & dispersal and Pacific (Lapita) peoples history to be reciprocally illuminating?

Where did breadfruit come from? (Who are its closest relatives)

These are questions asked by systematists.

Nyree Zerega

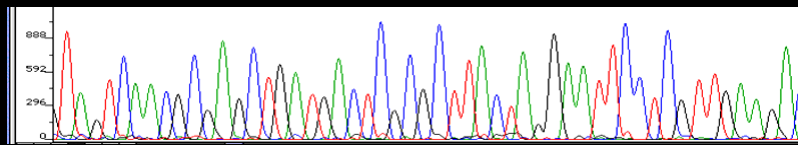
Zerega, NJC. 2003. The breadfruit trail. *Natural History* 112(10): 46-51.

Zerega, NJC, D Ragone, TJ Motley. 2004. Complex origins of breadfruit

(*Artocarpus altilis*, Moraceae): Implications for human migrations

in Oceania. *American Journal of Botany* 91(5): 760-766.

Sources of phylogenetic (cladistic) data

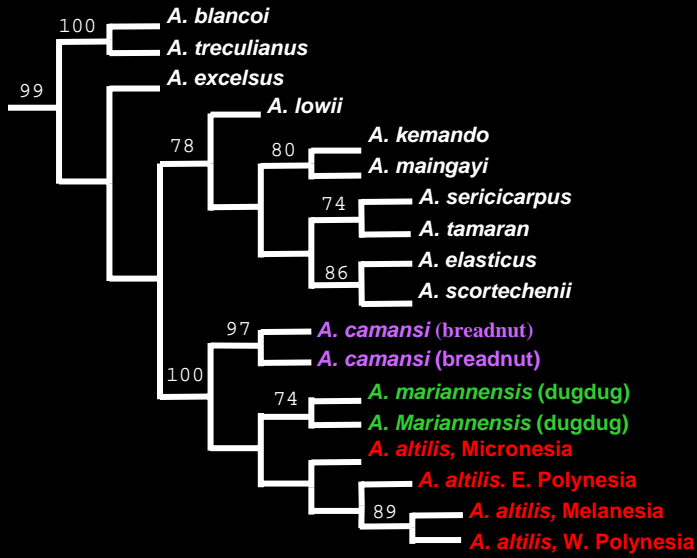


Nuclear region: ITS

Plastid region: *trnL-F*



Portion of most parsimonious cladogram



Breadfruit's closest relatives

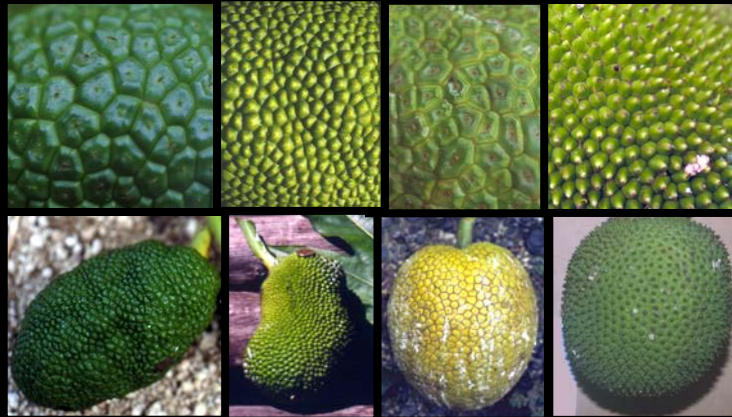


A. mariannensis
(dugdug)

A. attilis, breadfruit

A. camansi
(breadnut)

Infructescence shape and texture variation



A. mariannensis

A. altilis, breadfruit

A. camansi

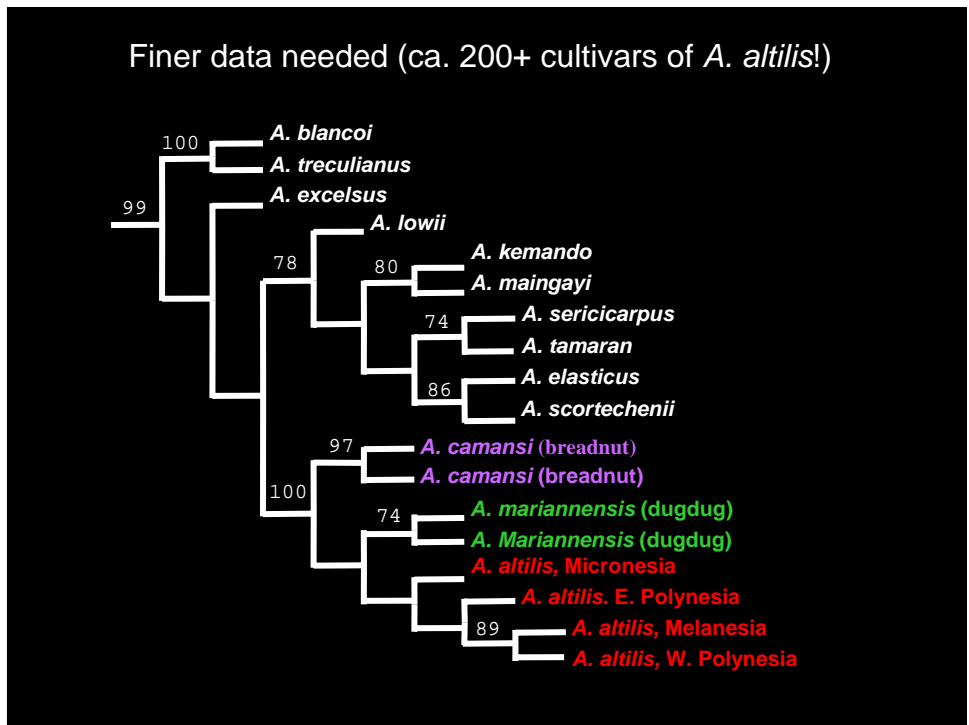
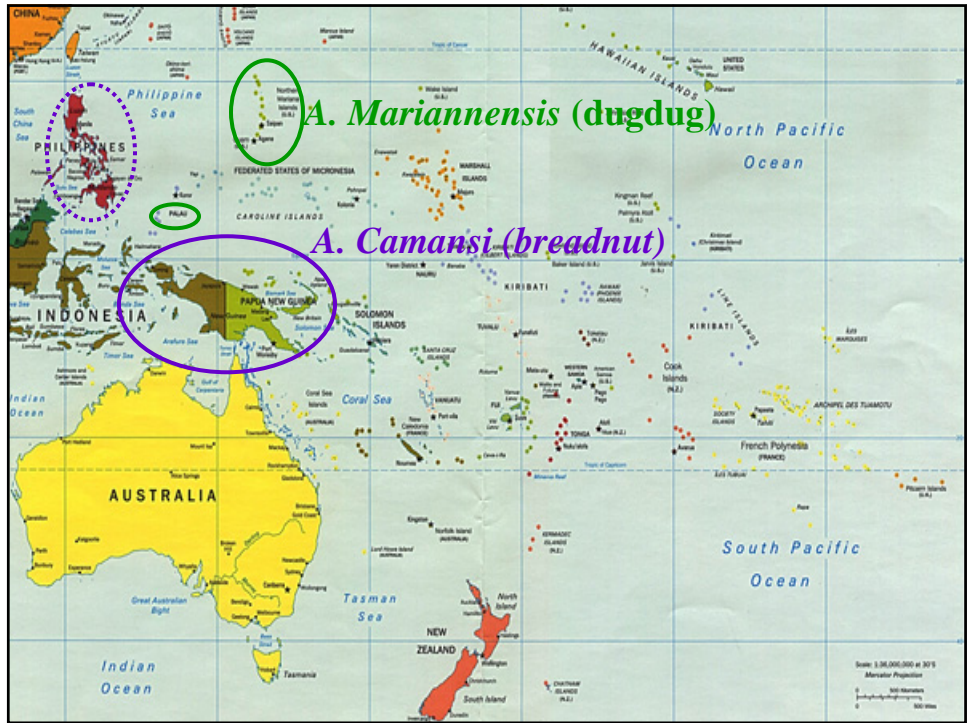
Leaf variation



A. mariannensis

A. altilis, breadfruit

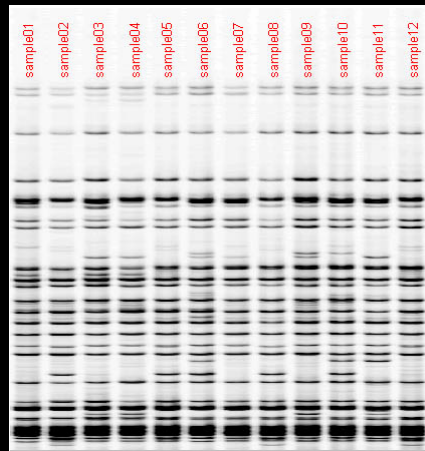
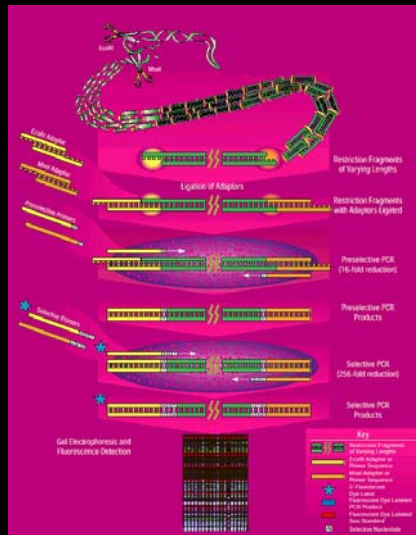
A. camansi



Amplified Fragment Length Polymorphisms (AFLPs) (DNA fingerprinting)

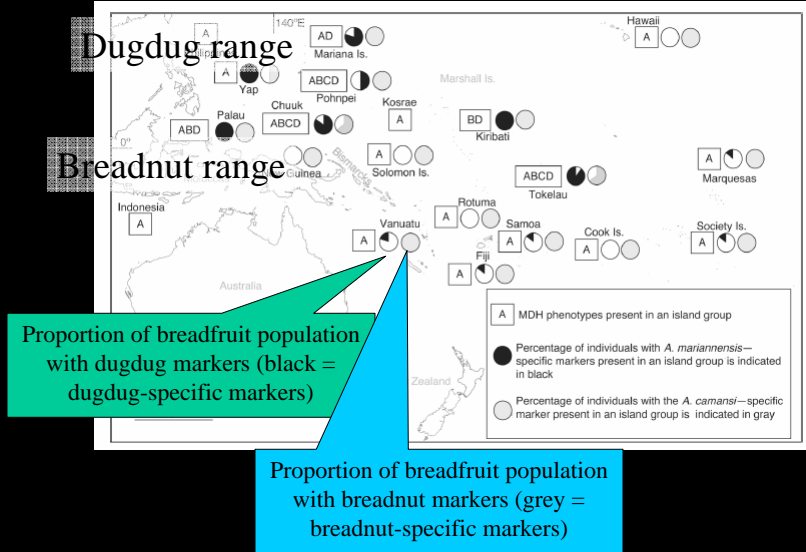
Isozymes / Allozymes Analysis (protein profiling)

Amplified Fragment Length Polymorphisms (AFLPs) (DNA fingerprinting)



Much of breadfruit is breadnut, some islands (esp. Micronesia) with dugdug too.

Diane Ragone (NTBG), N. Zerega



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Lapita reach Hawaii 1700 ybp

