

The break-up and dispersal of *Arundo donax* by bulldozers

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Invasive Plant Control Program

GIANT REED -- *Arundo donax*



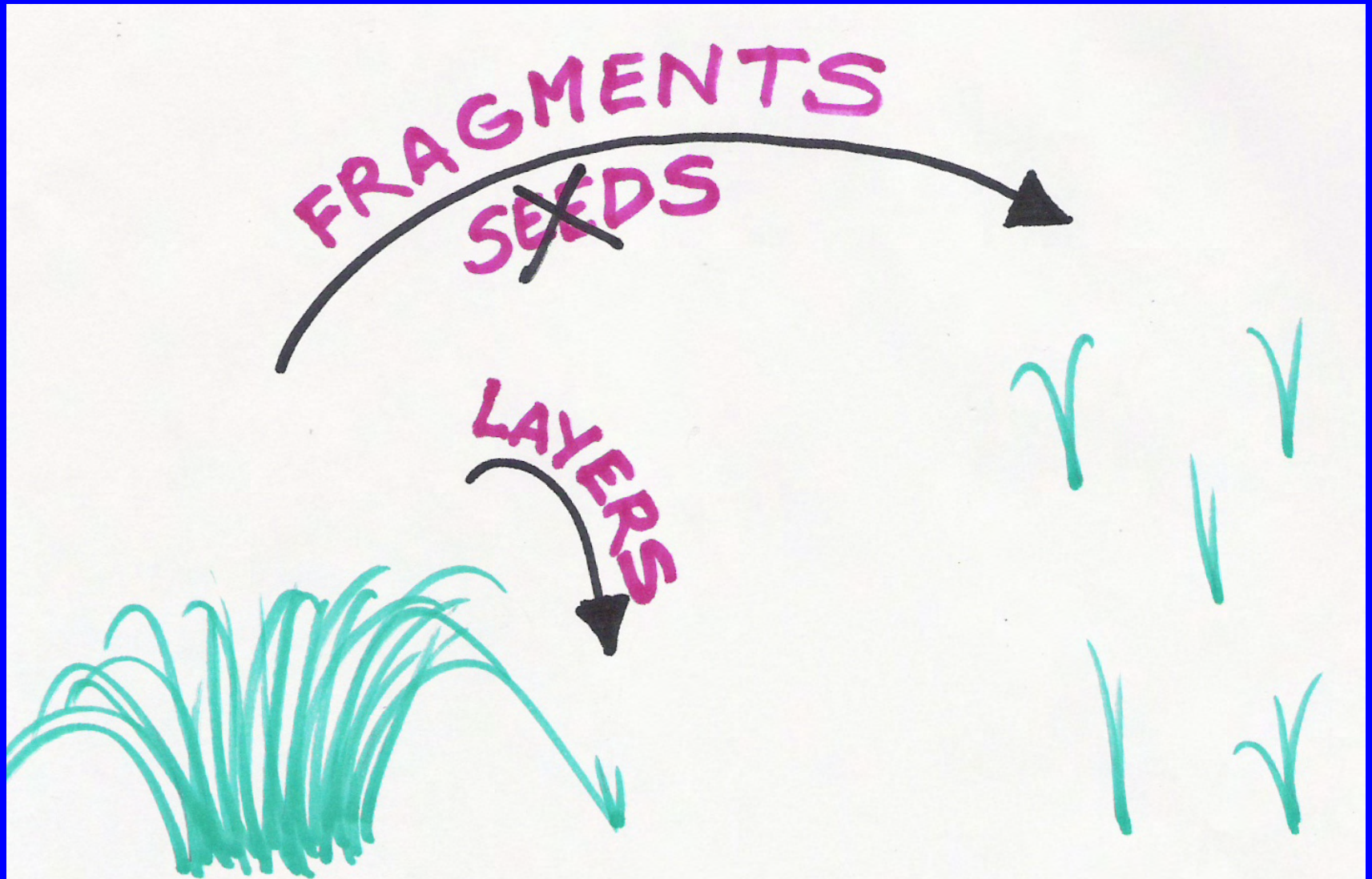


Cal-IPC News Fall 2006

M. Johnson, T. Dudley and C. Burns
(UC Santa Barbara)

- “The invasion of California riparian areas by *Arundo* continues despite efforts to control its spread, and there remains some uncertainty as to how it is able to do so.”

ARUNDO INVASION



MAJOR PRODUCER OF FRAGMENTS:





BULLDOZERS BREAK-UP ARUNDO ROOTSTOCKS







BULLDOZERS PILE DEBRIS ON BANKS



NEW ARUNDO RECRUITS SPROUT IN DEBRIS







SMUGGLER'S GULCH SURVEYS



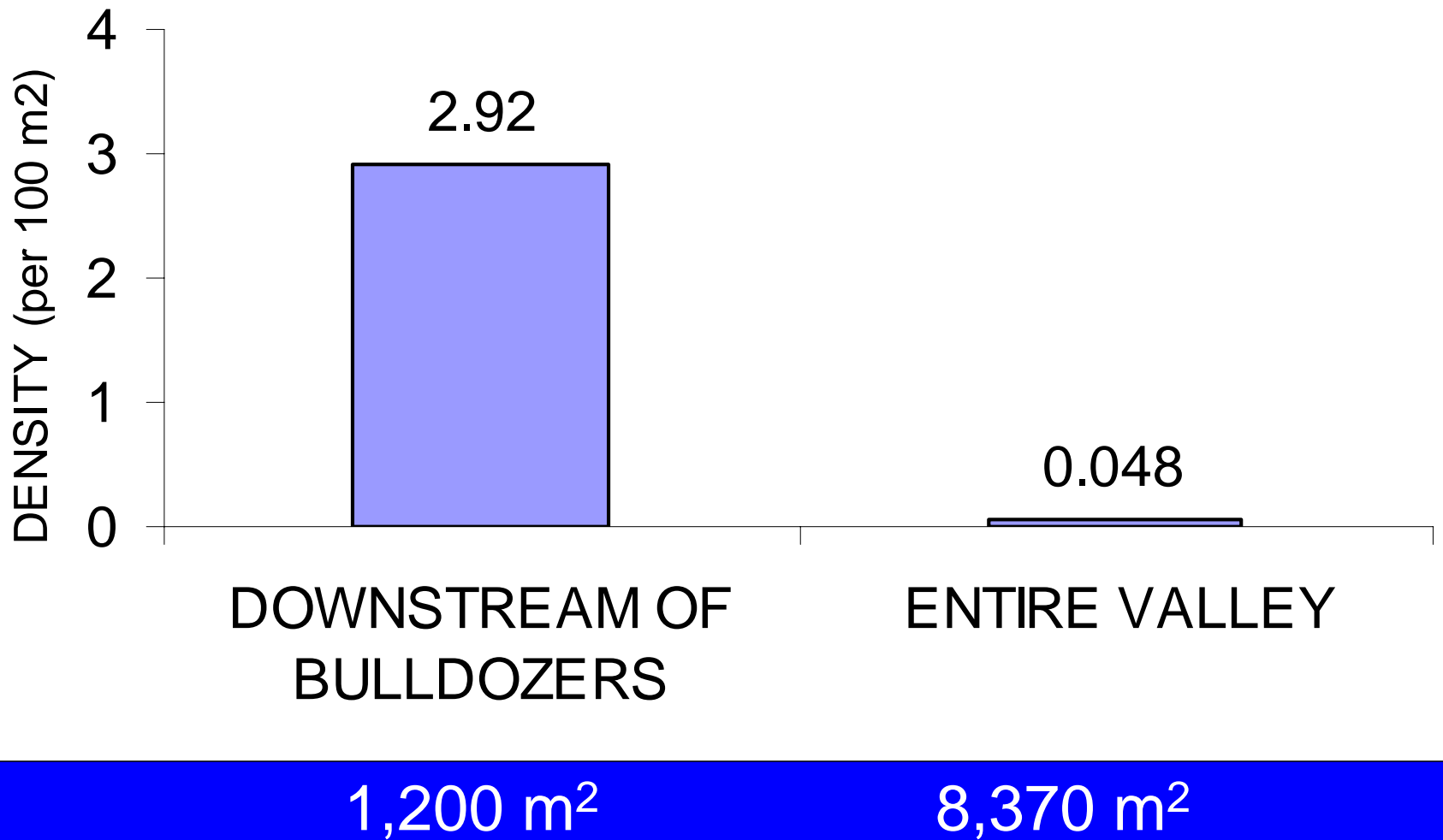
Arundo – Smuggler's Gulch (450m)

| clumps | before | during | after | now |
|---------------|---------------|----------------|-------------------|-------------|
| | 2004 | Jan '05 | 2005 - '06 | 2007 |
| Large | 2 | 2** | 2 | 2 |
| Small | 1 | 0 | 15 | 10 |
| TOTAL | 3 | 2** | 17 | 12 |

BULLDOZERS INCREASE RECRUITMENT DOWNSTREAM

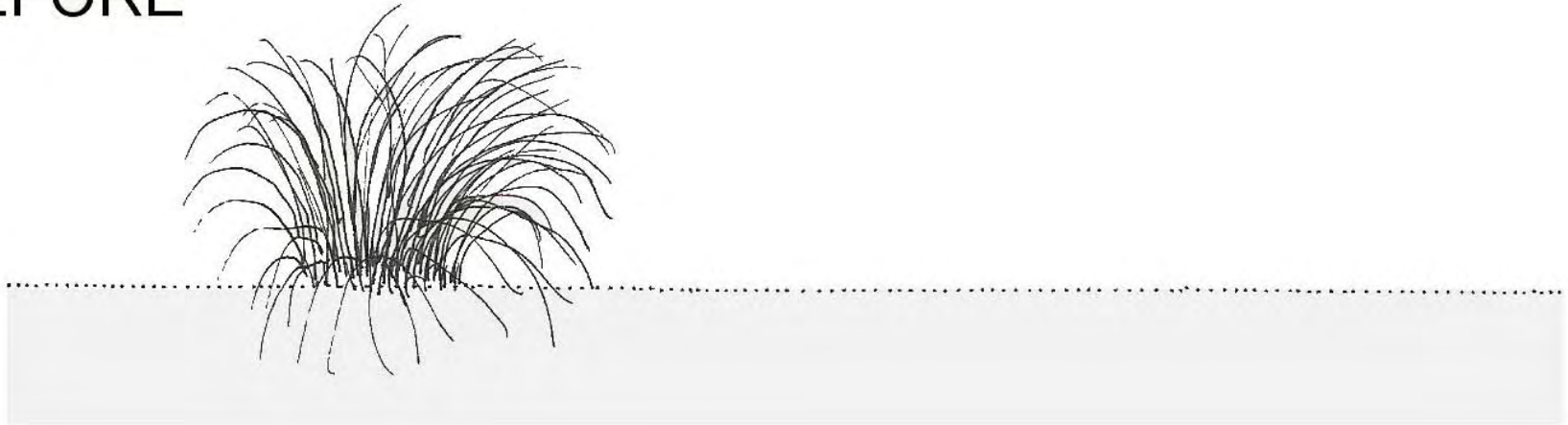


DENSITY OF SPROUTING FRAGMENTS

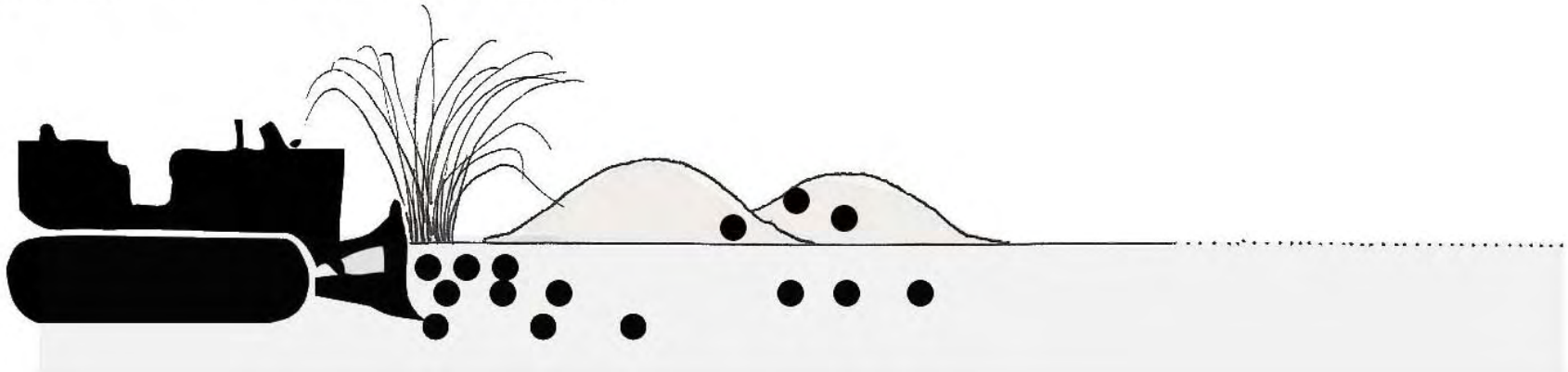


BULLDOZER HYPOTHESIS

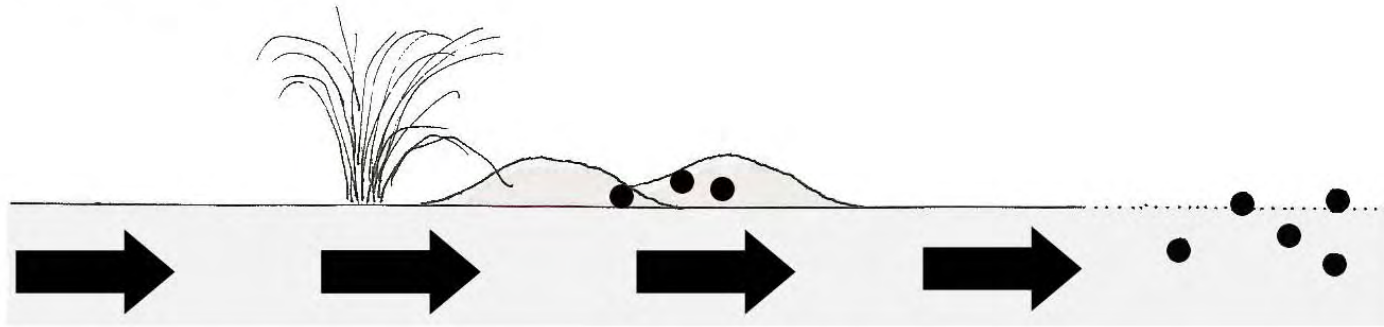
BEFORE



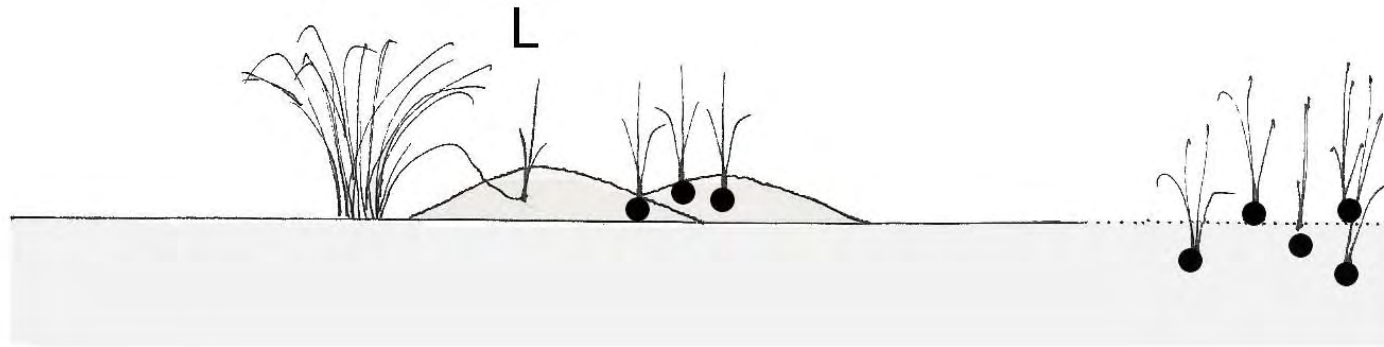
STEP 1 - BULLDOZER



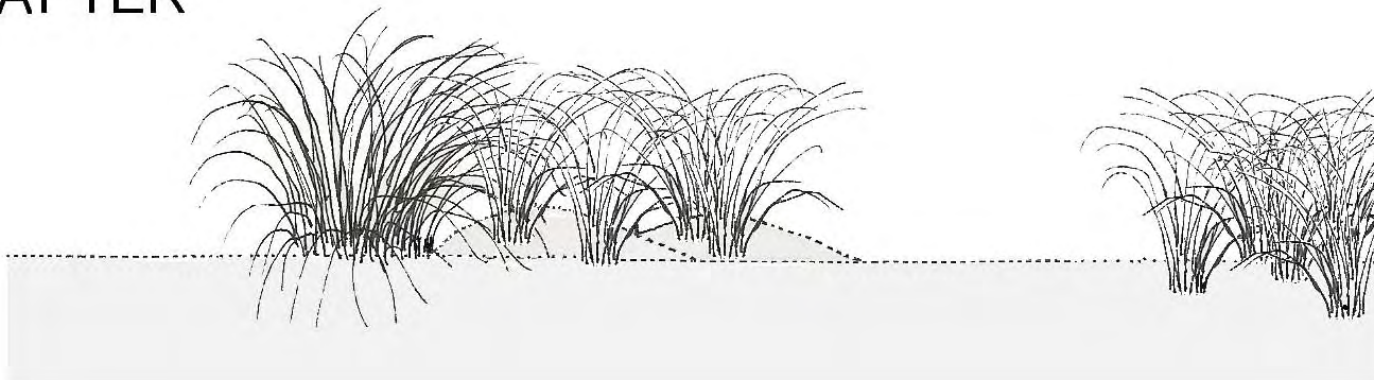
STEP 2 - FLOOD



STEP 3 - GROWTH



AFTER



A TEST OF A PREDICTION

- ARUNDO ABUNDANCE SHOULD BE GREATER AT SITES WHERE BULLDOZERS ARE FREQUENTLY USED THAN AT SITES IMMEDIATELY UPSTREAM WHERE THEY ARE NOT
 - QUARRIES
 - CHANNEL MAINTENANCE



MT HOOD

MT HOOD

HOOD

HOOD

HOLLAND





| SITE | OP | ARUNDO ABUNDANCE |
|---|----|---------------------|
| Private property, Harmony Grove | CM | BULL. >>>> UPS. |
| Sand Mine, Rancho Santa Fe | Q | BULL. > UPS. |
| Estuary Way, Sorrento Valley | CM | BULL. >>> UPS. |
| Quarry, Mission Gorge Road | Q | BULL. >>>> UPS. |
| Quarry, Chula Vista | Q | BULL. >> UPS. |
| Pilot Channel, Tijuana River Valley | CM | BULL. > UPS. |
| Smuggler's Gulch, Tijuana River Valley | CM | BULL. >> UPS. |

BULLDOZER HYPOTHESIS SUPPORTED



**BULLDOZERS APPEAR TO BE
VERY IMPORTANT IN:**

- **THE BREAK-UP OF CLUMPS**
- **THE DISPERSAL OF FRAGMENTS**
- **THE PROPAGATION OF ARUNDO**

