Coastal Cactus Wren Restoration & Monitoring Update

Bryan Endress
Sara Motheral
Lisa Nordstrom
Colleen Wisinski
And many more…

SAN DIEGO ZOO
INSTITUTE FOR
CONSERVATION
RESEARCH

San Diego Zoo Safari Park
(formerly Wild Animal Park)

- 900-acre native species reserve
  - Part of MHPA/MSCP
  - CSS with cactus
  - Habitat damaged in 2003 & 2007 fires
- Largest stand of Cactus Wren habitat in county (~38 acres)
- Likely largest Cactus Wren population in county


900-acre native species reserve
Safari Park
CA Hwy 78
Cactus scrub

2007 Witch Creek Fire

Cactus Regeneration


2-3 Years Post-Fire

Post-fire Population Estimates

- 2008: 33 pairs in San Pasqual Valley / Lake Hodges
  - 10 pairs at Safari Park
  - 5 pairs at San Pasqual Battlefield (adjacent to Park)
- 2010: ~63 wrens at Safari Park

Overall Goals

- Restore/enhance habitat
- Study and monitor Cactus Wren population
- Evaluate the effects of restoration on the birds

Habitat Enhancement

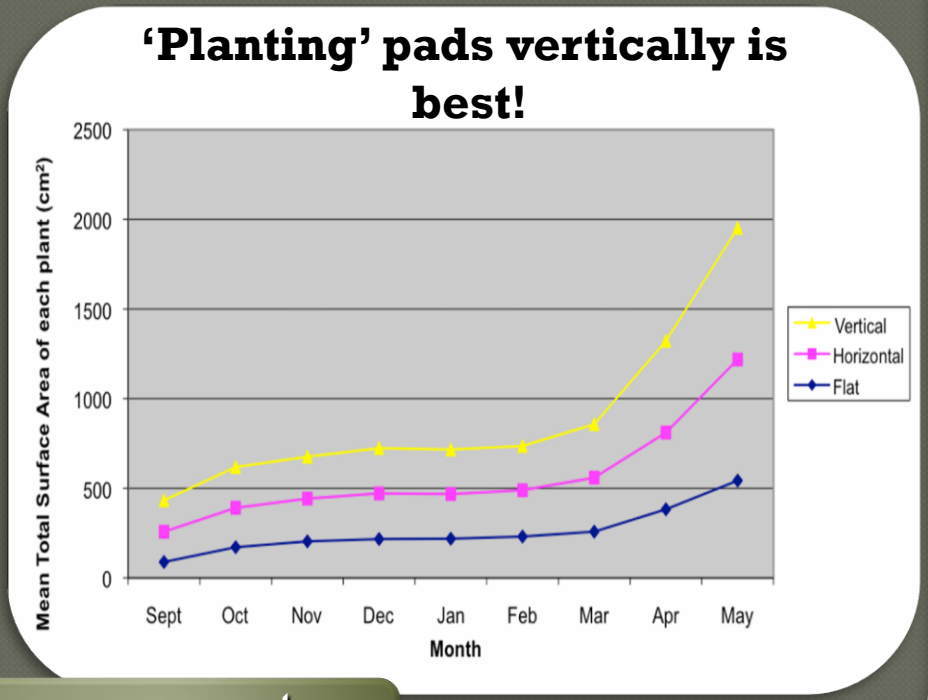
Restoration and Habitat Monitoring Goals

- Enhance 45 acres of Cactus Wren habitat over 3 years
- Expand and connect existing habitat patches
- Evaluate cost-effective propagation & restoration techniques
- Evaluate the effects of restoration on the birds
- Develop a habitat suitability model

Pilot Experiments

Do different pad planting techniques affect establishment and growth rates?

- Phase 1: Garden experiment



Does this carryover to field experiments?

Pilot Experiments

Do different pad planting techniques affect establishment and growth rates?

- Phase 2: Field Experiment
  - flat vs. planted
  - Propagated vs. direct planting

Challenges…..

Year 1 Restoration: Winter 2010

- 15 one-acre plots
  - 150 cacti/acre
- Baseline vegetation surveys
- 2250 cacti planted
- Experimental Framework
  - Head starting
  - Assisting establishment

Head starting techniques

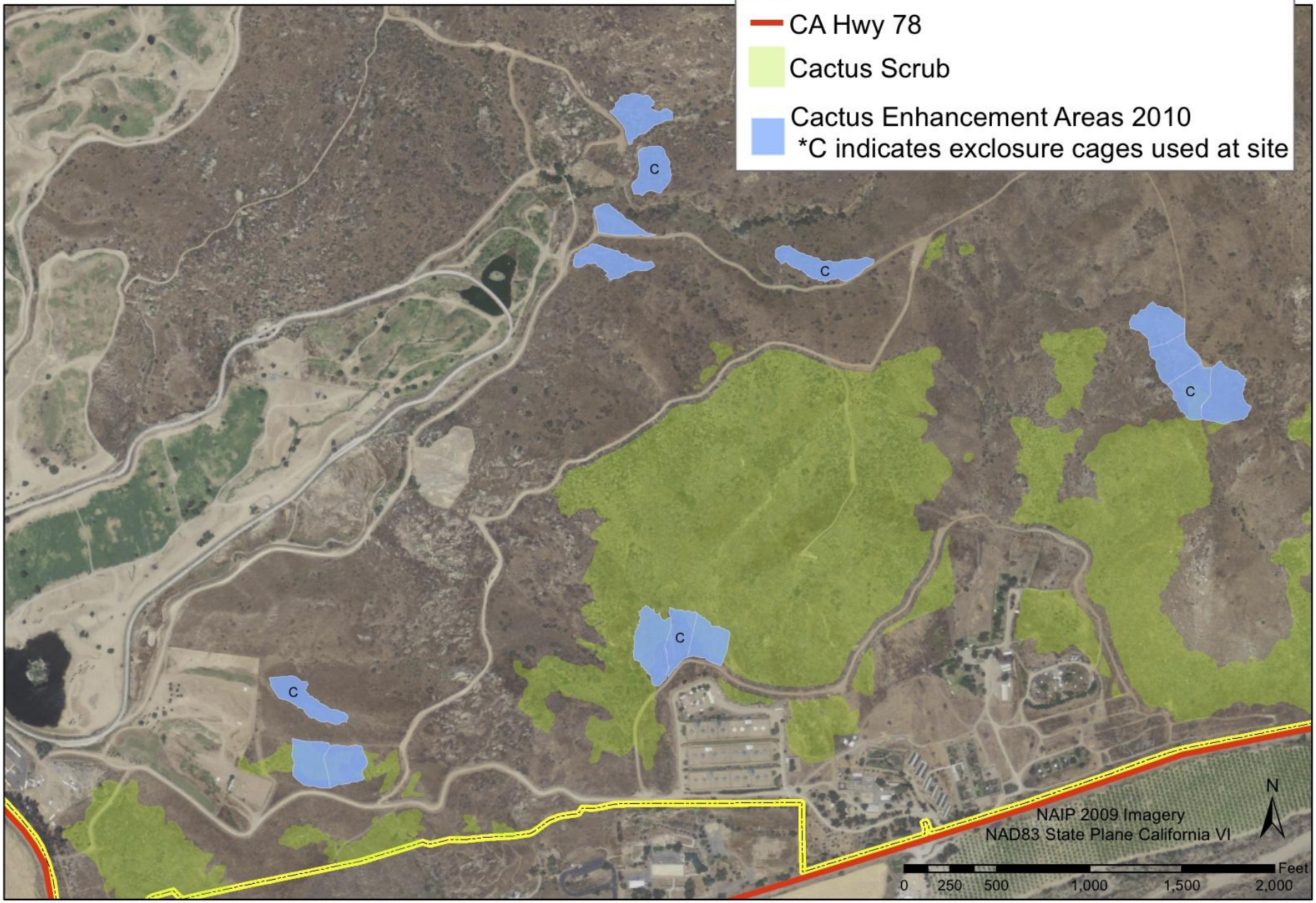
Type	Pros	Cons
Propagated 	• Faster growth • Developed root system • Larger cacti = more resistance to herbivores • Greater chance of establishment	• Space/time/labor commitment • Expensive: cost of soil, pots, watering, etc.
Dry-rooted 	• Developed root system ~ 6 month • Less expensive than propagated • No irrigation required	• Need storage space for several months • Slower growth and longer establishment than propagated
New pads 	• Quick • Less holding time = temp. storage (1 month) • No irrigation required	• Longer establishment phase • Slow growth • Susceptible to herbivores

Other ways to assist establishment

- Experimental Subset (5 plots)
  - Supplemental Watering
    - How often?
      - 4 weeks
      - 6 weeks
      - 8 weeks
  - Cages
  - Evaluate cost/benefit

	Watering treatment				
	Control not caged	Control Caged	4 weeks caged	6 weeks caged	8 weeks caged
Dry Rooted (6 months)	25	25	25	25	25
New pads (1 month)	25	25	25	25	25
Potted (1 year)	25	25	25	25	25

Safari Park Native Species Reserve
Cactus Enhancement Areas 2010



Restoration 'Islands'

Cactus Wren Habitat

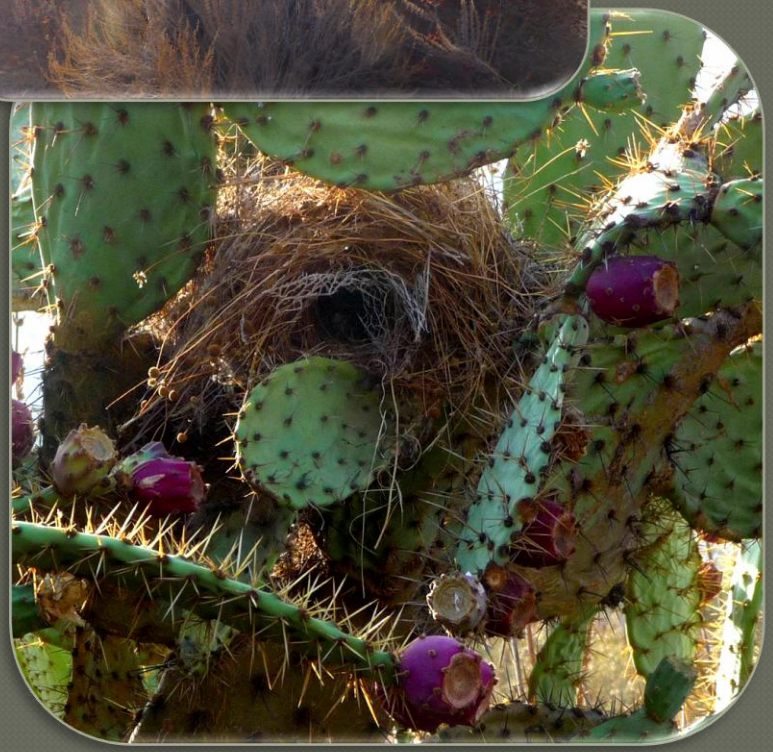
Next Steps

- 15 additional acres to be restored in each of 2011 and 2012
- Evaluation of survival and growth of:
  - Head starting treatments
  - Caged vs. uncaged
  - Watering treatments (4, 6, or 8 weeks)
- Characterize micro-habitat surrounding nests to develop a habitat suitability model

Cactus Wren Monitoring

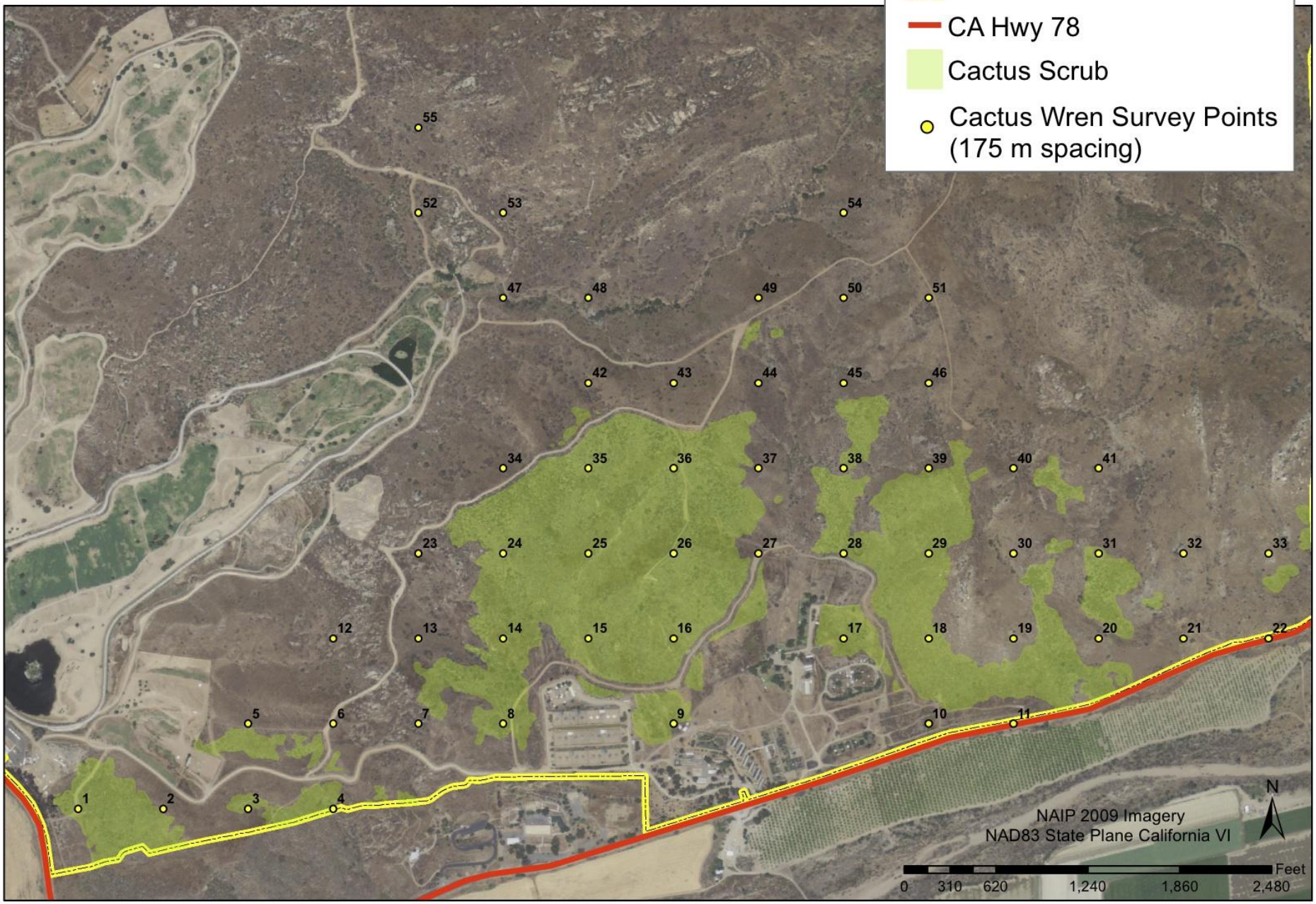
- Mapping cactus wren nests & evaluating habitat use
- Estimating population size
- Examining survival, productivity, and dispersal
- Evaluating the effect of habitat restoration on the population (long-term)

Cactus Wren Monitoring



- Point counts (2 per year)
  - Breeding season
  - Non-breeding season
- Completed first 2 point count surveys
  - November 2010~ 63 wrens
  - March/April 2011 ~ Lots!

Safari Park Native Species Reserve
Cactus Wren Survey Points 2010

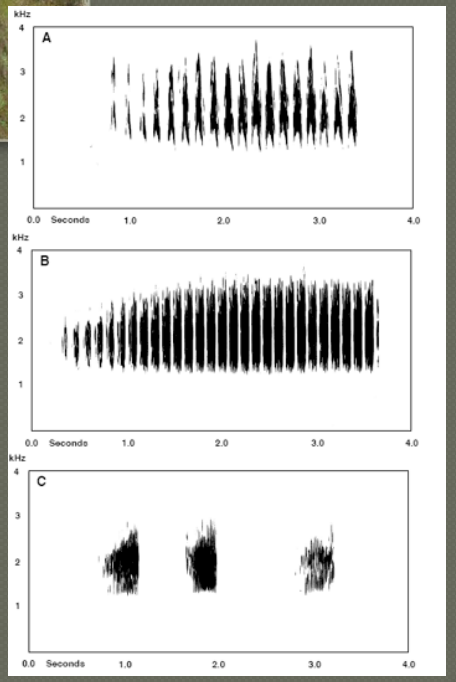


Testing other methods: Video and audio monitoring

- Surveillance video cameras to record behavior at nests
  - How long nests last
  - Confirm activity
  - Capture breeding activity
  - Breeding phenolgy
  - Predation

Video and audio monitoring

- Audio recordings during Point Count Survey
- "Sound Arrays"
  - Run 24/7
  - Bird locations
  - Individuals
  - Effects of disturbance (i.e. road noise)



from Birds of North America Online

Photo credit: Wildlife Acoustics

Future Cactus Wren Work

- Quantifying nesting habitat requirements
- Banding and telemetry study in the future
- Collection of genetic material to reassess taxonomy
- Creating resilient population in SPV/Lake Hodges

Thanks

- ICR: Matt Anderson, Christa Horn, Laurie Lippitt, Katie Merrill, Ollie Ryder, Claire Wainwright, Conservation Corps, Volunteers
- City of San Diego, San Dieguito River Valley Conservancy, San Dieguito River Park, USGS, USFWS, Kris Preston, Trish Smith, and many more.
- Enviromental Management Program, SANDAG/transnet

Questions?