

# Leveling the Playing Field: Employing High Technology to Combat Poachers

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# Basic Stats

- 30,000 elephants killed in 2012.
- 668 rhinos in just South Africa in 2012.
- 500 rhinos since Jan. 01, 2013 in RSA.
- Tusks = \$3500/kg @30kgs/pair= \$125,000.
- Rhino =\$65,000/kg@7kg = \$450,000 each.
- China is main consumer of tusks.
- Vietnam is main consumer of rhino horn.





South Africa



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# Olifant West, South Africa



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CAL,

# May-June 2013 Flights

- 11 flights including 5 at night at Olifants West.
- Bungee launch and parachute recovery.
- Used both IR and EO cameras.
- Challenge of heavy winds at 35 kts at night.
- Easy to spot animals and humans at night even down to wild dogs and guinea fowl.
- Clear proof of concept.



# KEY ISSUES

- How to employ advanced technologies to combat poaching ?
- What types of appropriate technologies should be used that is:
  - Exportable – ITAR vs. Commerce
  - Importable – National security vs. civil aviation
  - Affordable
  - Easy to maintain
  - Simple to use and operate in the field.



# Operational Use of Drones

- The Falcon UAV for use in Africa
- Currently in use with police in US
- Range of + 10 kms, speed 45 knots,
- Operates at up to 500 meters altitude
- Wing = 2.4 m Length = 1.3m
- Training 1 day plus test flights
- Hand launch with parachute or belly landing





# Drone Packages

- Combined EO/IR Gimbal Two-axis Steerable.
- Battery rechargeable in vehicle.
- Autopilot enabled.
- Rally to Home Lost Link
- Assembly = 1 min. with Launch in 5 min.
- Live video feed to control laptop in vehicle.
- Total Weight = 8 -12 kgs.
- US Commerce Dept. License not ITAR.



# LESSONS LEARNED

- Africa is too big to randomly launch UAVs.
- Night flights present greater challenge.
- Mathematical modeling is essential to narrow areas to be monitored.
- Predictive analysis and heuristic modeling can tell when and where to fly.
- Model is able to learn from each flight.



# LESSONS LEARNED

- Range of UAV is NOT the critical parameter.
- Focus on how fast and how far rangers be deployed at night for intercept.
- Maximum of no more than 10-12 kms.
- Parachute landings key for night flights.
- Must be proactive with flight plans and ranger deployment from mathematical modeling.
- UAVS are only a tool.



# Next Steps

- Given full access to all Kruger data – beginning to model the park.
- Model of Balule Reserve completed.
- Plans to fly in Kruger NP and two reserves in Natal in early 2014.
- Beginning modeling in Tanzania and Kenya in January, 2014/
- Expect to fly those sites first qtr. 2014.



# Fear the Turtle



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